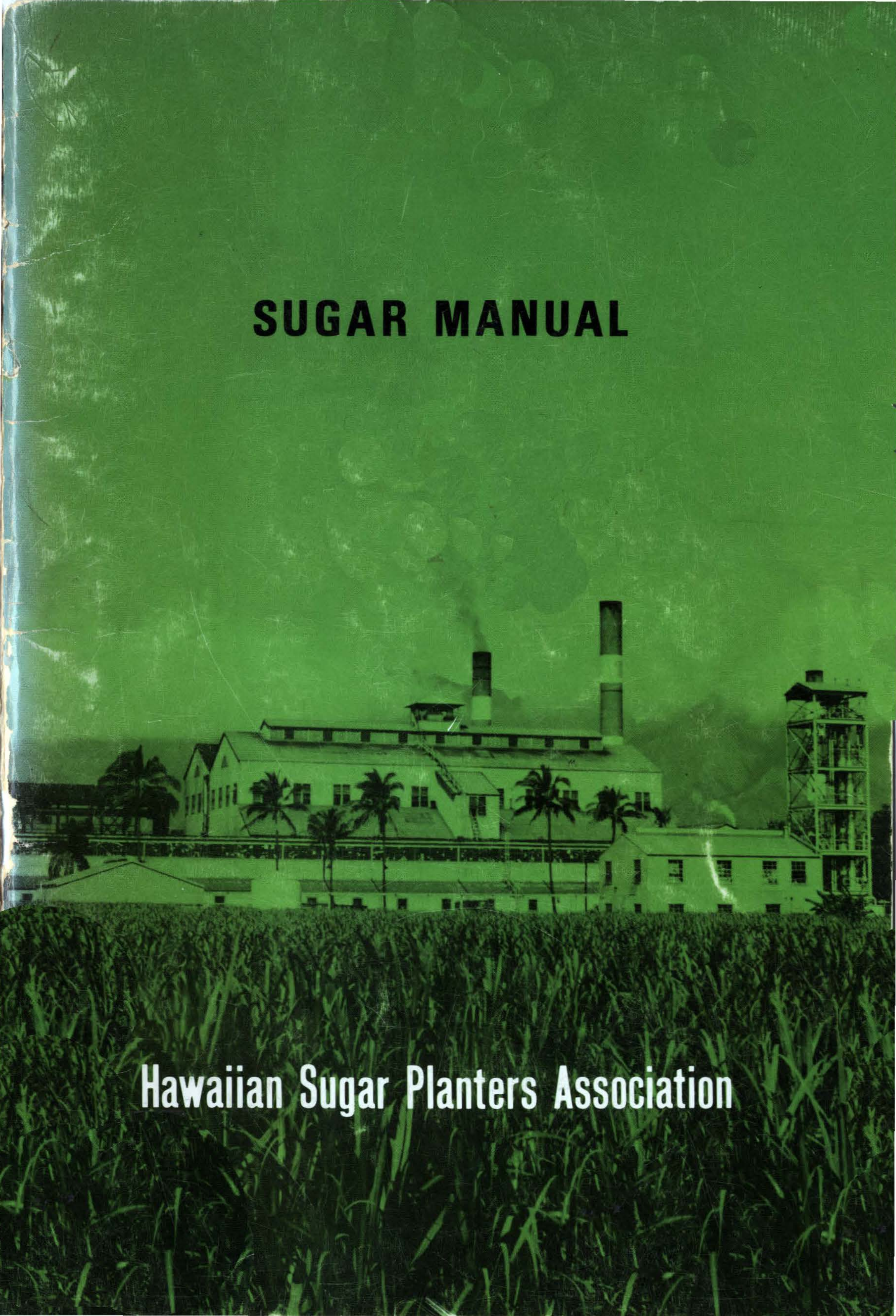
SUGAR MANUAL



Hawaiian Sugar Planters Association

HSPA SUGAR MANUAL

PUBLISHED BY

Hawaiian Sugar Planters' Association

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HAWAIIAN SUGAR COMPANIES

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Phone: 338-8233

GROVE FARM CO., INC.
L. M. Van Dreser, *Mgr.*
Puhi, Kauai 96766
Phone: 245-2341; 245-2711

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W. J. Baldwin, *Mgr.*
Kekaha, Kauai 96752
Phone: 337-1472

KILAUEA SUGAR CO., LTD.
Dale Anderson, *Acting Mgr.*
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Phone: 293-5303

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Phone: 637-4520

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PIONEER MILL CO., LTD.
J. W. Siemer, *Mgr.*
Lahaina, Maui 96761
Phone: 661-0061

WAILUKU SUGAR COMPANY
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Phone: 244-3941

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L. A. Thevenin, *Mgr.*
Paauilo, Hawaii 96776
Phone: 776-1216

HAWAIIAN AGRICULTURAL COMPANY
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Phone: 962-6314; 962-6244

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Phone: 775-7221

PEPEEKEO SUGAR COMPANY
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Pepeekeo, Hawaii 96783
Phone: 963-6211

PUNA SUGAR CO., LTD.
David P. Young, *Mgr.*
Keaau, Hawaii 96749
Phone: 966-9270

Part I

HAWAII'S SUGAR INDUSTRY

COMMERCE & INDUSTRY

Historically, Hawaii is an agricultural economy. While tourism and military expenditures in recent years have grown extensively, agriculture remains the state's most stable producer of income.

Sugar is Hawaii's most important agricultural industry. It created nearly $190,000,000 in income during 1969. Pineapple is second largest. Estimated value of canned pineapple products is about $127 million annually.

Diversified farming—all other Hawaiian agricultural production—has a value of about $55 million annually.

Because Hawaii must import most of her food and other essentials from the U.S. Mainland, the out-of-state sale of sugar and canned pineapple products are important factors in the state's balance of trade.

SUGAR INDUSTRY

Hawaii's sugar industry is recognized as the world's leader in sugar technology and production.

The first attempt to make sugar in Hawaii was in 1802. It was not until 1835, however, that the first successful sugar company was established. Fields of that firm are still producing today, more than 135 years later.

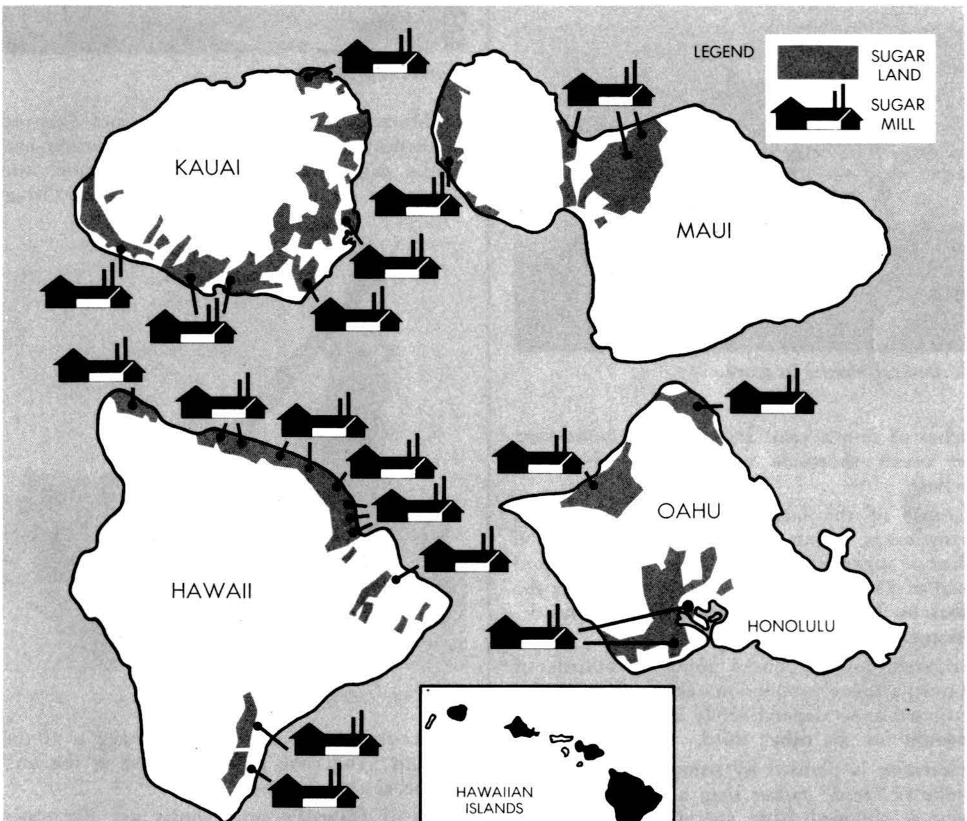
After a slow start, production reached 100,000 tons a year in 1886; 250,000 tons in 1897; and 500,000 tons in 1908. But it was not until the 1930-31 season that production reached 1 million tons for the first time. Since then, 1 million tons annual production has been exceeded 19 times, including the past nine consecutive years.

CURRENT PRODUCTION

In 1969, 1,182,414 tons of raw sugar were produced.

Value of 1969 production to the state economy from raw sugar and molasses production and

SUGARCANE PRODUCING AREAS, SUGAR MILL LOCATIONS, HAWAIIAN ISLANDS



from Sugar Act compliance payments is an estimated $189 million.

Sugar is produced on four of Hawaii's eight major islands—Hawaii, Maui, Oahu and Kauai — by 23 sugar companies employing about 11,000 year-round employees. Annual payroll is more than $70 million including the cost of employee benefits.

GROWING SUGAR IN HAWAII

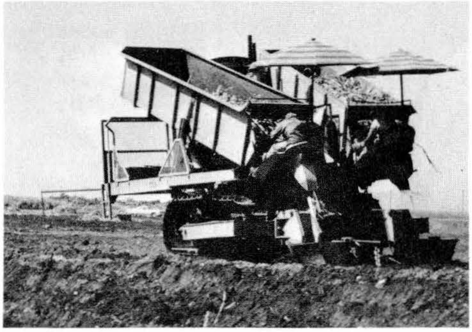
Hawaii's sugar industry is unique in a number of ways. It produces more sugar per acre than any other area in the world. It is the only area where the average age of the cane is two years at time of harvest.

Hawaii's sugar industry is the most highly mechanized in the world. Hand labor has been virtually eliminated.

It is the world's technological leader.

The climate of Hawaii varies considerably. Tropic rain forests can be found within a few miles of desert conditions.

On some sugar company lands average rainfall is as little as 15 inches a year. On others as high as 212 inches a year. One sugar company's mountain fields receive an average of 133



Mechanical planter at work.

inches of rain a year. Its low-lying fields near the ocean shoreline receive only about 20 inches.

Because of the lack of adequate rainfall in many areas, about half of Hawaii's 242,000 acres of sugar lands are irrigated. An estimated total of $50 million has been invested over the years by Hawaii's sugar companies in the development of irrigation systems.

Irrigated land produces about two-thirds of Hawaii's sugar production. The remaining unirrigated areas depend solely upon rainfall and account for the other third.

Sugarcane is planted by using pieces of cane stalks as "seed" rather than actual seed. Seedcane is obtained from special plots of cane, frequently harvested by machine.

Seedcane is planted by specially-developed machines which plant two or more rows, simultaneously burying each seedpiece under one-to-three-inches of soil.

About half of Hawaii's sugar lands are harvested each year. When sugarcane is harvested, it grows again from the old root system (ratoon crops) without planting again after each harvest. From two to four ratoon crops are obtained from each original planting.

Harvesting sugarcane.

Bulldozers equipped with push tines (instead of blades) are most often used to harvest Hawaii's sugarcane. They push the cane into windrows. Grab-cranes load the cane into large

Loading harvested sugarcane.

tractor-trailers, some of which have a 60-ton capacity. The cane is then hauled to the mill for processing into raw sugar.

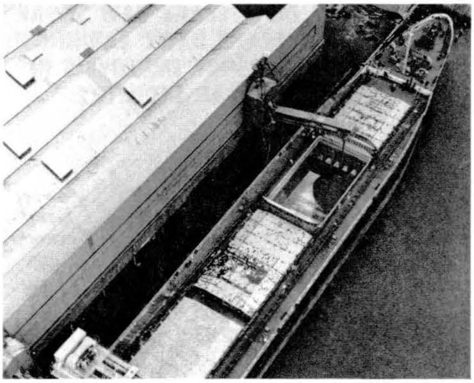
Most of Hawaii's sugar mills use the traditional grinding method of processing cane, but the diffusion method also is used.

RAW SUGAR GOES TO U.S. MAINLAND

Approximately 97 percent of all Hawaiian raw sugar production is shipped to the U.S. Mainland for refining. About three percent is processed in a local refinery, largely for Hawaiian consumption.

All of Hawaii's raw sugar is transported in bulk form. Hawaii's 23 sugar companies use five bulk storage and loading plants located on the four sugar islands. Location and year in which the bulk storage plants began operation are: Kahului, Maui—1942; Hilo, Hawaii—1949; Nawiliwili, Kauai—1950; Honolulu—1955; and, Kawaihae, Hawaii—1959.

In 1969, shipment of raw sugar from Hawaii to the mainland accounted for 83 vessel sailings.



Bulk shipping Hawaiian raw sugar.

HAWAIIAN SUGAR COMPANIES BY ISLANDS, WITH ACREAGE AND PRODUCTION FOR 1969
(RAW VALUE)

	TOTAL CANELAND ACREAGE	ACREAGE HARVESTED	PRODUCTION (SHORT TONS)
	HAWAII		
Hamakua Mill Co.	8,154	3,759	32,960
Hawaiian Agricultural Co.	10,697	3,658	43,979
Honokaa Sugar Co.	9,387	4,280	39,653
Hutchinson Sugar Co.	8,907	3,402	35,304
Kohala Sugar Co.	14,164	6,476	45,339
Laupahoehoe Sugar Co.	10,428	4,634	44,065
Mauna Kea Sugar Co.	12,899	6,415	65,597
Paauhau Sugar Co.	6,287	2,535	26,848
Pepeekeo Sugar Co.	13,126	6,145	55,191
Puna Sugar Co.	13,470	5,901	50,385
TOTAL HAWAII	107,519	47,205	439,321
	KAUAI		
Gay & Robinson	2,569	1,259	17,555
Grove Farm Co., Inc.	10,354	4,936	40,086
Kekaha Sugar Co., Ltd.	7,904	4,002	54,691
Kilauea Sugar Co., Ltd.	4,801	2,297	15,549
The Lihue Plantation Co.	15,881	8,071	66,110
McBryde Sugar Co., Ltd.	5,948	2,951	32,358
Olokele Sugar Co., Ltd.	4,806	2,344	30,698
TOTAL KAUAI	52,263	25,860	257,047
	MAUI		
Hawaiian Commercial & Sugar Co.	30,544	14,604	184,937
Pioneer Mill Co., Ltd.	9,371	4,629	54,962
Wailuku Sugar Co.	5,022	2,405	28,956
TOTAL MAUI	44,937	21,638	268,855
	OAHU		
*Ewa Sugar Co., Inc.	9,413	4,657	54,684
Kahuku Plantation Co.	4,402	2,363	20,511
*Oahu Sugar Co., Ltd.	11,602	5,657	68,382
Waialua Sugar Co., Ltd.	12,080	5,852	73,614
TOTAL OAHU	37,497	18,529	217,191
GRAND TOTAL	242,216	113,232	1,182,414

*Assets of Ewa Sugar Co. acquired by Oahu Sugar Co. Feb. 1, 1970.

COMPARISON OF AVERAGE RAW SUGAR PRICE AND AVERAGE DAILY EARNINGS FOR NON-SUPERVISORY EMPLOYEES IN HAWAIIAN SUGAR INDUSTRY

	Average New York Raw Sugar Price cwt. (Hawaiian Basis)	*Average Daily Earnings*[1]
1935	$3.23	$1.699
1936	3.60	1.884
1937	3.45	2.074
1938	2.93	2.134
1939	2.98	2.170
1940	2.78	2.180
1941	3.39	2.479
1942	3.74	2.900
1943	3.74	3.590
1944	3.74	3.910
1945	3.75	5.100
1946	4.59	5.275[2]
1947	6.22	7.632
1948	5.56	8.024
1949	5.81	8.040
1950	5.93	8.300
1951	6.06	9.000
1952	6.26	9.700
1953	6.29	10.200
1954	6.09	10.580
1955	5.95	10.62
1956	6.09	10.73
1957	6.25	11.20
1958	6.27	12.78
1959	6.24	12.84
1960	6.31	13.18
1961	6.30	14.11
1962	6.45	14.96
1963	8.20	16.68
1964	6.90	17.60
1965	6.75	18.40
1966	6.99	19.76
1967	7.28	21.35
1968	7.52	21.62
1969	7.75	23.26

[1] Cash wage only. Does not include "employee benefits" which amounted to $9.76 a day in 1969.

[2] Effective December 1946 the perquisite system, as such, was eliminated and charges for services were instituted which in total were designed to cover costs. In practice these costs have not been fully met and in case of medical care fall far short of this objective. Sugar company policy is to not make a profit on items formerly provided as perquisites.

Revised June, 1970

WAGES, HOURS & WORKING CONDITIONS

Hawaii's 11,000 year-round sugar company employees are the highest paid agricultural workers in the world, on the combined basis of their average daily cash earnings and the value of their employee benefits.

Sugar company production employees work in 11 labor grades. Current (June, 1970) Grade 1 rate of pay is $2.24 an hour. Grade 11 employees earn $3.89 an hour. Work performed in excess of 40 hours is paid for at premium rates.

DAILY AVERAGE EARNINGS IN 1969

Wages	$23.26
Employee Benefits	9.76
Total	$33.02

EMPLOYEE BENEFITS

Year-round employees receive up to four weeks vacation with pay, nine paid holidays a year; paid sick leave for up to 54 days, medical plan, a dental care plan for dependent children, retirement pensions, severance pay and many other benefits.

1969 PAYROLL COSTS OF 23 SUGAR COMPANIES, ALL EMPLOYEES

$70,586,077.31

APPROXIMATE EMPLOYMENT BY OCCUPATION AT SUGAR COMPANIES

Factory	1,350
Field	3,700
Motive Equipment	1,900
Construction and Surveying	260
Dispensary	50
Clerical	280
Trades	1,620
Miscellaneous	540
Supervisors	1,300
Total	11,000

UNIONIZATION

Production and maintenance employees at 22 of 23 of Hawaii's sugar companies are organized by the International Longshoremen's and Warehousemen's Union.

NON-MIGRATORY WORK FORCE

Unlike most farming areas which are seasonal and rely on migratory labor, Hawaii's sugar industry provides year-round, long-term employment. Sugar operations are conducted on a 12-month basis.

PRODUCTIVITY: HAWAII SUGAR FIELDWORKER

	WEIGHTED AVERAGE EARNINGS $ PER HOUR			MAN-HOURS PER TON SUGAR Raw Value	WAGE COSTS $ PER TON SUGAR** Raw Value
	Earnings	Benefits	Total		
1946	$0.586	$0.147	$0.733	33.24	$24.36
1947	.776	.123	.899	31.30	28.14
1948	.955	.140	1.095	30.54	33.44
1949	1.056	.185	1.241	27.32	33.90
1950	1.089	.195	1.284	25.86	33.20
1951	1.127	.235	1.362	24.18	32.93
1952	1.204	.251	1.455	23.00	33.47
1953	1.303	.269	1.572	23.42	36.82
1954	1.372	.339	1.711	21.06	36.03
1955	1.448	.405	1.853	17.42	32.28
1956	1.469	.448	1.917	17.30	33.16
1957	1.538	.482	2.020	16.46	33.25
1958	1.597	.571	2.168	18.02	39.07
1959	1.753	.521	2.274	16.90	38.43
1960	1.794	.557	2.351	16.72	39.31
1961	1.919	.605	2.524	13.90	35.08
1962	2.003	.734	2.737	13.76	37.66
1963	2.100	.750	2.850	13.56	38.65
1964	2.308	.750	3.058	11.76	35.96
1965	2.436	.800	3.236	10.82	35.01
1966	2.617	.800	3.417	10.50	35.88
1967	2.798	.900	3.698	10.88	40.23
1968*	2.983	1.050	4.033	10.52	42.43

*Preliminary.
**Including Earnings and Fringe Benefits.

TAXES PAID

Sugar is one of the largest taxpayers in Hawaii. In 1968, sugar companies paid a total of about $20,551,000 in Federal and State taxes. The largest single item in taxes was about $14,144,000 in the Federal income tax. State taxes totalled about $6,407,000. Rounded out amounts in State taxes paid included:

Gross Income	$1,601,000
Real Property	2,288,000
State Income	1,546,000
Unemployment Compensation	350,000
City & County Licenses	252,000
Miscellaneous	370,000

SUGAR LANDS

The Hawaiian Islands make up the union's fourth smallest state. The islands are actually the summits of a chain of volcanic mountains, some of which are still active. Only certain lowlands near the coasts are tillable because of the rugged terrain and the character of the soils. The balance is forest, pasture and wasteland.

Hawaii's sugar companies are located along the coastlines of the four sugar islands and push upwards into the foothills and mountains.

There are 242,216 acres of land devoted to growing sugar in Hawaii, another 15,906 acres used as mill sites, roads, irrigation ditch systems and reservoirs. This is equal to about 6.3 percent of total land area and about 12.2 percent of total private land.

More than half of the sugar lands are owned by the sugar companies. The balance is leased from government or private owners.

ISLAND LAND AREAS WITH SUGAR

Island	Extreme Length Miles	Extreme Width Miles	Area Square Miles*	Area Acres 000's	Total Cane Acreage**
Hawaii	93	76	4,038	2,573	107,519
Maui	48	26	729	466	44,937
Oahu	44	30	608	381	37,497
Kauai	33	25	553	353	52,263
Molokai	38	10	261	166	....
Lanai	18	13	139	90	....
Niihau	18	6	73	46	....
Kahoolawe	11	6	45	29	....
Minor Islands	....	....	4	2	....
			6,450	4,106	242,216

* Includes land and inland water.
** Does not include mill sites, roads, etc.

HAWAII LAND OWNERSHIP

		Acres
Government		
Federal	401,482	
State	1,590,532	
	1,992,014	1,992,014
Private		2,113,586
Total		4,105,600

LAND TENURE*

23 Sugar Companies & Independent Grower Farms/Adherent Planters

Land Used By Sugar Companies	*Acreage*	*Total Acreage*
Owned in Fee Simple	139,808	
Leased	100,662	
	240,470	240,470
Land Used By Independent Grower Farms/ Adherent Planters		
Leased from sugar companies	4,691	
Sub-leased from sugar companies	2,428	
Direct Ownership, or Leased from Other Sources	10,533	
	17,652	17,652
Total		258,122

INDEPENDENT GROWERS

Number Grower Farms** .. 728

* Includes "attributable land": roads, reservoirs, mill sites and irrigation ditch systems (approximately 15,900 acres).
** Does not include Co-producers or Adherent Planters.

CANE SUGAR: PRODUCTION IN HAWAII, 1908-1969

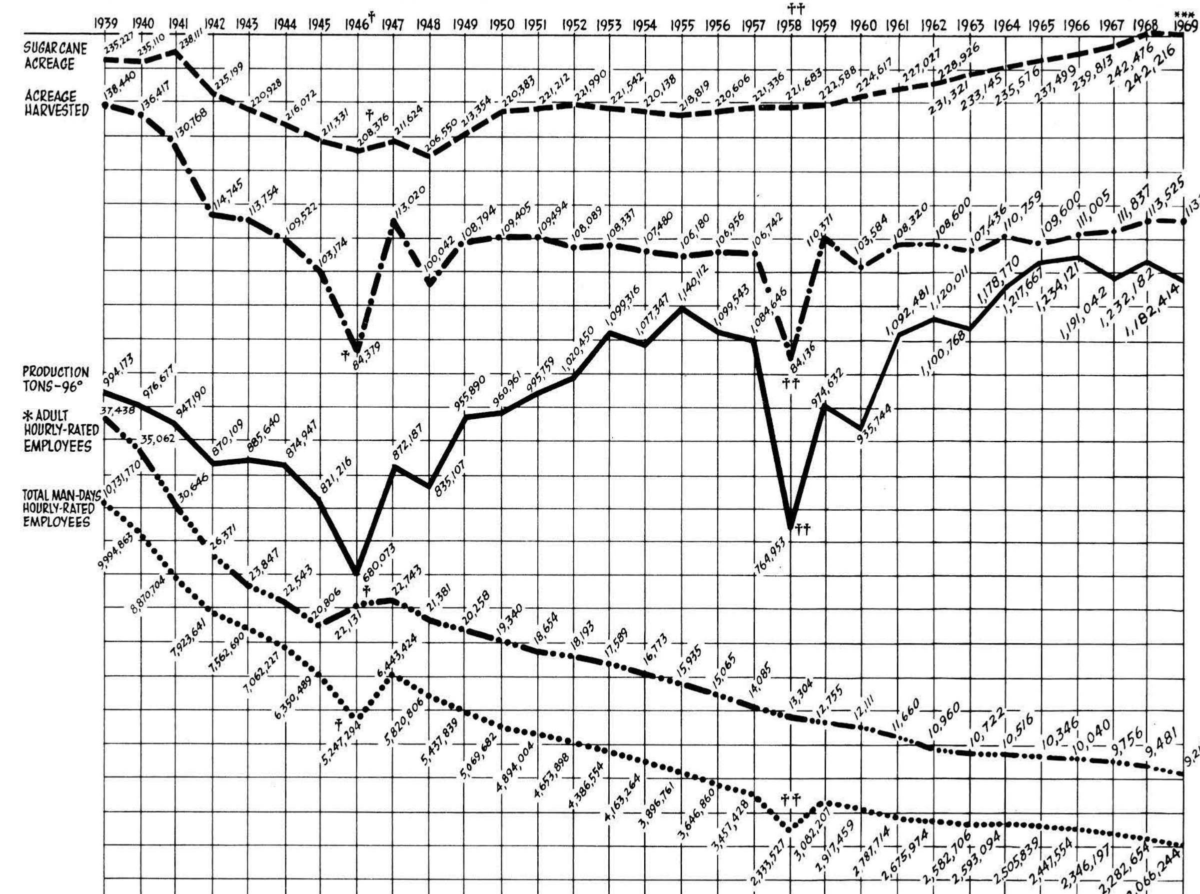
Production Year[1] (Beginning Oct. 1st, Ending Sept. 30th)	Tons sugar per acre	Tons cane per ton sugar	Total cane land area	CANE USED FOR SUGAR: Acreage harvested[2]	CANE USED FOR SUGAR: Average yield per acre	CANE USED FOR SUGAR: Production	SUGAR PRODUCED: Converted to 96° raw value[3]	SUGAR PRODUCED: Equivalent refined[4]	Raw value 96° sugar made per short tons of cane
			Acres	Acres	Short Tons	Short Tons	Short Tons	Short Tons	Pounds
1908–1909	5.14	7.42	201,641	106,127	38.2	4,050,000	545,738	510,048	270
1909–1910	4.81	7.78	209,469	110,247	37.4	4,122,000	529,940	495,282	257
1910–1911	5.16	7.94	214,312	112,796	41.0	4,623,000	582,196	544,120	252
1911–1912	5.34	7.75	216,345	113,866	41.4	4,711,000	607,863	568,109	258
1912–1913	4.90	7.99	215,741	113,548	39.1	4,445,000	556,654	520,249	250
1913–1914	5.54	8.01	217,470	112,700	44.4	5,000,000	624,165	583,345	250
1914–1915	5.75	7.96	239,800	113,164	45.8	5,184,393	650,970	608,397	251
1915–1916	5.17	8.14	246,332	115,419	42.1	4,859,424	596,703	557,679	246
1916–1917	5.57	7.98	247,476	117,468	44.4	5,220,000	654,388	611,591	251
1917–1918	4.86	8.34	246,813	119,785	40.5	4,855,804	582,192	544,117	240
1918–1919	5.07	7.81	239,844	119,679	39.6	4,744,070	607,174	567,465	256
1919–1920	4.91	7.98	247,838	114,105	39.2	4,473,498	560,379	523,730	251
1920–1921	4.83	8.53	236,510	113,056	41.2	4,657,222	546,273	510,547	235
1921–1922	4.98	8.23	228,519	124,124	41.0	5,088,062	618,457	578,010	243
1922–1923	4.85	8.23	235,134	114,182	39.9	4,559,819	554,199	517,954	243
1923–1924	6.42	7.91	231,862	111,581	50.7	5,661,000	715,918	669,097	253
1924–1925	6.47	8.06	240,597	120,632	52.2	6,297,000	781,000	730,000	248
1925–1926	6.58	8.07	237,774	122,309	53.1	6,495,686	804,644	752,020	248
1926–1927	6.68	8.41	234,809	124,542	56.1	6,992,082	831,648	777,258	238
1927–1928	7.00	8.37	240,769	131,534	58.6	7,707,330	920,887	860,661	239
1928–1929	7.16	8.05	239,858	129,131	57.7	7,447,494	925,140	864,636	248
1929–1930	7.02	8.36	242,761	133,840	58.7	7,853,439	939,287	877,858	239
1930–1931	7.43	8.33	251,533	137,037	61.9	8,485,183	1,018,047	951,467	240
1931–1932	7.57	8.38	251,876	139,744	63.4	8,865,323	1,057,303	988,155	239
1932–1933	7.34	8.05	254,563	144,959	59.1	8,566,781	1,063,605	994,045	248
1933 (Oct.1-Dec.31)	....	....	....	....	....	....	127,317	118,990	....
1934*	7.14	8.33	252,237	134,318	59.5	7,992,260	959,337	896,596	240
1935	7.82	8.67	246,491	126,116	67.8	8,555,424	986,849	922,309	231
1936	7.97	8.80	245,891	130,828	70.1	9,170,279	1,042,316	974,149	227
1937	7.46	9.32	240,833	126,671	69.5	8,802,716	944,382	882,619	215
1938	6.92	9.39	238,302	135,978	65.0	8,835,370	941,293	879,732	213
1939	7.18	8.66	235,227	138,440	62.2	8,609,543	994,173	929,154	231
1940	7.16	8.76	235,110	136,417	62.7	8,557,216	976,677	912,802	228
1941	7.24	9.04	238,111	130,768	65.5	8,559,797	947,190	885,244	221
1942	7.58	9.10	225,199	114,745	69.0	7,918,342	870,099	813,195	220
1943	7.70	9.24	220,928	113,754	71.9	8,185,400	885,640	827,719	216
1944	7.99	8.95	216,072	109,522	71.5	7,832,185	874,947	817,725	223
1945	7.96	8.98	211,331	103,173	71.4	7,371,158	821,216	767,509	223
1946	8.06	8.83	208,376	84,379	71.1	6,002,127	680,073	635,596	227
1947	7.72	9.11	211,624	113,020	70.3	7,942,216	872,187	815,146	220
1948	8.35	9.03	206,550	100,042	75.4	7,542,613	835,107	780,491	221
1949	8.76	8.44	213,354	108,794	73.9	8,045,941	955,890[5]	893,375	238
1950	8.78	8.51	220,383	109,405	74.7	8,174,821	960,961[6]	898,114	235
1951	9.09	8.51	221,212	109,494	77.4	8,477,201	995,759	930,636	235
1952	9.44	8.52	221,990	108,089	80.4	8,693,920	1,020,450	953,712	235
1953	10.15	8.19	221,542	108,337	83.1	9,003,967	1,099,316	1,027,421	244
1954	10.02	8.75	220,138	107,480	87.75	9,431,781	1,077,347	1,006,889	228
1955	10.74	8.66	218,819	106,180	92.94	9,867,978	1,140,112	1,065,525	231
1956	10.28	9.01	220,606	106,956	92.65	9,909,990	1,099,543	1,027,633	222
1957	10.16	8.71	221,336	106,742	88.51	9,447,647	1,084,646	1,013,710	230
1958	9.09	9.87	221,683	84,136	89.77	7,552,750	764,953	714,925	203
1959	8.83	9.66	222,588	110,371	85.31	9,416,225	974,632	910,891	207
1960	9.03	9.20	224,617	103,584	83.15	8,613,317	935,744	874,546	217
1961	10.09	8.78	227,027	108,320	88.58	9,595,342	1,092,481	1,021,033	228
1962	10.31	8.76	228,926	108,600	90.36	9,812,580	1,120,011	1,046,762	228
1963	10.25	9.12	231,321	107,436	93.39	10,033,969	1,100,768	1,028,777	219
1964	10.64	8.90	233,145	110,759	94.76	10,495,175	1,178,770	1,101,678	225
1965	11.11	8.82	235,576	109,600	97.97	10,737,507	1,217,667	1,138,033	227
1966	11.12	8.89	237,499	111,005	98.82	10,969,925	1,234,121	1,153,409	225
1967	10.65	9.27	239,813	111,837	98.74	11,045,949	1,191,042	1,113,148	216
1968	10.85	9.15	242,476	113,525	99.36	11,279,920	1,232,182	1,151,597	218
1969	10.44	9.17	242,216	113,232	95.73	10,839,272	1,182,414	1,105,060	218

1. From 1908-1933 acreage harvested represents summation of plantation crop years and does not necessarily correspond to the period Oct. 1 to Sept. 30.
2. The average growth of a crop is from 22 to 24 months. Only a portion of the total acreage in cane is harvested each year.
3. Converted in accordance with Sugar Regulations, Series 1, No. 1, U.S. Department of Agriculture, Agricultural Adjustment Administration, issued February 18, 1935, or Section 101(h) of the Sugar Act of 1948 or corresponding provisions of its predecessors, as the case may be.
4. 1 ton of sugar, 96° test is assumed to be equivalent to 0.9346 tons of refined.
5. Includes 2.369 tons raw sugar produced from volunteer cane for which no acreage shown.
6. Includes 2,690 tons raw value sugar produced from volunteer cane for which no acreage shown.

*Begin Calendar Year Basis.

COMPARISON:

SUGARCANE ACREAGE, ACREAGE HARVESTED, PRODUCTION, AVERAGE NUMBER OF ADULT HOURLY RATED EMPLOYEES, AND TOTAL MAN-DAYS ALL HOURLY RATED EMPLOYEES ON HAWAIIAN SUGAR PLANTATIONS



* PRIOR TO 1947 INCLUDED ONLY MALE ADULTS
† 1946: INDUSTRY-WIDE STRIKE, 2½ MONTHS
†† 1958: INDUSTRY-WIDE STRIKE, 4 MONTHS
*** 1969: INDUSTRY-WIDE STRIKE, 5 WEEKS

INDUSTRY ORGANIZATION

All 23 Hawaiian sugar companies operate independently of each other, each with its own management. But to facilitate the actual production of sugar, all sugar companies but one are represented by an agency or parent company in Honolulu.

This representation grew out of a lack of communications and transportation during the early period of the Hawaiian industry's emergence as we know it today. A century ago, the only means of travel and communication between islands were inter-island sailing vessels, and the planters relied on Honolulu agents for certain business services.

The agencies and parent companies of today offer a variety of services to the sugar companies which do not require the full-time services of specialists on the sugar companies management staffs. These services include financial, accounting, purchasing, shipping and other technical assistance. The specialists of one agency or parent company serve a number of sugar companies in most instances. Agencies and parent companies are Alexander & Baldwin, Inc.; Amfac, Inc.; Bishop Trust Company, Ltd.; C. Brewer and Company, Ltd.; Castle & Cooke, Inc. and Theo. H. Davies & Company, Ltd.

HAWAIIAN SUGAR PLANTERS' ASSOCIATION

The Hawaiian Sugar Planters' Association was established in 1895 replacing the Planters' Labor and Supply Company which had been in existence since 1882.

The Association is a nonprofit, agricultural organization of sugar companies and individuals united for the purposes of maintenance, advancement and protection of the sugar industry in Hawaii, the support of a scientific experiment station and the development of agriculture in general.

The HSPA is administered by an executive committee composed of sugar company representatives. The president, who serves for one year, is elected from among the committee members.

The following principal committees represent the major activities of the Association: Accounting, Industrial Relations, Insurance, Land, Legislative, Growers', Tax, Experiment Station Advisory, and Environmental Standards.

The HSPA acts as a clearing house for all scientific activities of the industry, making possible the utilization of the best technical knowledge available.

The Experiment Station of the Hawaiian Sugar Planters' Association also was established in 1895. The cost of operating this scientific research organization, some $2,500,000 annually, is borne in full by the HSPA, with each sugar company paying a pro-rata share of the total.

The Station has developed many new varieties of sugar cane particularly suitable for the Hawaiian soil and climate, has kept insect pests and plant diseases at a minimum, and has contributed generally to the high yield of Hawaiian cane areas. Its research and services have benefited all agriculture in Hawaii. The Station maintains substations on all of the four sugar producing islands and a quarantine station on Molokai.

The HSPA maintains an office in Washington, D.C., which represents the industry in all of its government relationships, in contacts with other elements of the domestic industry, and acts as general representative of the industry on the mainland.

REFINING HAWAIIAN RAW SUGAR

All of Hawaii's raw sugar and molasses production is marketed by the California and Hawaiian Sugar Company, the only cane sugar refiner on the Pacific Coast.

C and H, as the company and its products are generally known, is an agricultural marketing association. Its stock is owned by its 23-member sugar producing companies in Hawaii, substantially in the same proportion as the tonnage of raw sugar each markets through the association. C and H also serves as refining and marketing agency for some 700 independent, non-member sugar cane farmers in Hawaii.

C and H was established in 1906—under the Capper-Volstead Act which authorizes cooperative marketing associations by producers of agricultural products—in a successful effort by Hawaiian sugar producers to overcome discriminatory pricing practiced against Hawaiian raw sugar by a "sugar trust" which existed at that time among mainland sugar refiners.

Headquartered in San Francisco, C and H has capacity to refine approximately 1 million tons of raw sugar annually. Hawaiian raw sugar not required for C and H refining operations is sold by the company to Gulf and Atlantic Coast refiners. Hawaiian molasses is sold to distributors by C and H, primarily for use in animal feed.

Two refineries are operated by C and H, one the world's largest at Crockett, California near San Francisco, the other a smaller plant at Aiea, near Honolulu. The Crockett refinery has capacity to melt about 960,000 tons of raw sugar annually. The Aiea refinery can process about 40,000 tons of raw sugar a year, primarily to supply the refined sugar needs of Hawaii.

The mainland refinery is strategically located for receipt of raw sugar and other supplies as well as for distribution of refined sugars. Crockett is a protected deep water port on Carquinez Strait, where it joins San Francisco

Bay. Adjacent to a transcontinental highway, the refinery also is near the West Coast railheads of three major railways.

At the Crockett refinery bulk raw sugar cargoes are discharged from ships into dockside storage bins. These receiving and storage facilities have capacity for more than 100,000 tons of raw sugar.

Although portions of the refinery structure predate 1906, it houses some of the most innovative, sophisticated equipment and facilities in the industry. Fully equipped laboratories are staffed for basic research, quality control, new products research as well as microbiological and packaging materials investigation.

The refinery operates the year round, producing refined sugars in more than 100 types, grades and package sizes, including an unsurpassed variety of packaged sugars for the grocery trade, as well as sugars for industrial use in packaged, bulk granulated and liquid form. High speed refinery packaging equipment has capacity to turn out more than a million consumer size packages of refined sugar a day.

More than one and one-half miles of conveyors take packaged sugar from packing stations to automatic palletizers in the warehouse which mechanically form pallet loads and move sugar-loaded pallets into warehouse storage and shipping areas.

This warehouse has storage space for more than 50,000 tons of refined sugar.

Shipments of refined sugar move from the warehouse to customers by rail, truck and river boat. Within the warehouse is an enclosed rail siding upon which up to 14 standard freight cars can be spotted alongside loading docks. A covered truck-loading station can accommodate seven truck-trailer units for simultaneous loading.

Terminals for storage and distribution of bulk and liquid industrial sugars are operated by C and H at Seattle, Washington; Portland, Oregon; Crockett and Los Angeles, California; Aiea, Hawaii; and Phoenix, Arizona.

C and H sugars are sold in the two-thirds of the U.S. mainland, generally west of the Mississippi River Valley, as well as in Hawaii and Alaska. Sugars packaged for grocery sales bearing the "C and H" brand have the broadest geographical distribution of any U.S. sugar.

Chief competition for sales encountered by C and H is from beet sugar produced in 49 sugar beet factories. The majority of these processing plants are located in the 11 Western states, which due to freight costs comprise the primary, preferred market for C and H.

Sales of C and H sugars are handled through company sales offices in San Francisco, Oakland and Los Angeles, California and through sugar brokers with offices in key locations throughout the balance of the territory served.

C and H employs approximately 1,600 persons in mainland operations and has about 80 employees at the Aiea refinery. Total annual payroll is in excess of $15 million.

James H. Marshall is president and chief executive officer of C and H. Company headquarters offices are at One California Street, San Francisco, California, 94106.

HAWAII STATE GOVERNMENT DIRECTORY

The Islands of Hawaii joined the United States as a territory in 1898. Statehood was granted in 1959. Seat of State government is in Honolulu.

STATE ADMINISTRATION

Governor: John A. Burns (D)
Lt. Governor: Thomas P. Gill (D)

State Department & Department Heads

Accounting & General Services—KeNan Kim, *Comptroller*
Agriculture & Conservation—Dr. Kenneth K. Otagaki, *Chairman*
Attorney General—Bertram T. Kanbara
Budget & Review—Hiram Kamaka, *Director*
Department of Defense—Maj. Gen. Benjamin J. Webster
Planning & Economic Development—Dr. Shelley M. Mark, *Director*
Education — Wm. Waters, *Acting Superintendent*
Health—Dr. Walter B. Quisenberry, *Director*
Hawaiian Home Lands—A. K. Piianaia, *Chairman, Hawaiian Homes Commission*
Labor & Industrial Relations—Robert Hasegawa, *Director*
Land & Natural Resources — Sunao Kido, *Chairman*
Personnel Services — James H. Takushi, *Director*
Social Services—William G. Among, *Director*
Taxation—Ralph W. Kondo, *Director*
Transportation—Dr. Fujio Matsuda, *Director*
Regulatory Agencies — Edwin H. Honda, *Director*
University of Hawaii — Harlan Cleveland, *President*

State Legislature

President, Hawaii State Senate—David C. McClung (D)

Speaker—State House of Representatives — Tadao Beppu (D)

Congressional Delegation

Senate

Hiram L. Fong (R) Daniel K. Inouye (D)

U.S. House of Representatives

Spark M. Matsunaga (D) Patsy Takemoto Mink (D)

IMPORTANT HISTORICAL DATES

1802 Unidentified Chinese made crude sugar in primitive mill on Lanai Island, abandoned efforts.

1825 First plantation attempted in Manoa Valley, Oahu.

1835 Ladd & Company founded first successful plantation, Koloa on Kauai.

1837 First Koloa crop, 2.1 tons.

1838 Twenty sugar mills in operation, 18 animal powered, 2 water.

1852 First sugar centrifugal introduced, Makawao Plantation; arrival of first Chinese laborers.

1853 First steam engine, Koloa.

1857 Irrigation introduced, Lihue.

1859 First steam mill, Lihue.

1860 Judd and Wilder established first mill on Oahu, Kualoa Plantation.

1863 Pepeekeo introduced vacuum pan.

1868 First Japanese laborers arrived.

1876 Alexander & Baldwin built Hamakua Ditch at cost of $80,000, first large scale irrigation on islands, seventeen miles long and producing 40,000,000 gallons a day; reciprocal trade treaty, Kingdom of Hawaii and United States, admitted sugar duty free.

1878 Portuguese immigrants arrived.

1879 Ewa drilled first artesian well; Onomea pioneered with commercial fertilizer.

1881 German immigrants arrived at Lihue; Hamakua bought first steam plow.

1882 H.S.P.A. organized as Planters' Labor & Supply Co.

1885 First chemist engaged; Makee inaugurated night grinding.

1886 First 100,000-ton crop.

1895 Experiment Station founded; Ewa installed 9-roller mill.

1897 First 250,000-ton crop.

1898 Hawaii annexed to United States.

1904 Leaf hopper parasites introduced from Australia.

1905 H-109 variety of cane germinated from seedling.

1906 California & Hawaiian Sugar Refining Corp. founded; Filipino immigration.

1907 Oahu Sugar Co. installed first 12-roller mill.

1910 Kilauea introduced gasoline tractor. Cane borer parasite introduced from New Guinea.

1916 Anomala beetle parasite introduced from the Philippines.

1918 H.S.P.A. opened forestry department.

1920 Leaf hopper completely controlled by egg-sucking bug introduced from Australia and Fiji.

1922 First commercial scale mechanical loading of sugar cane by self-propelled vehicle.

1923 First Dorr Clarifiers (2 factories).

1924 First of series of ten consecutive record crops.

1926 First Oliver Filter, Oahu Sugar Company.

1928 Establishment of sugar cane quarantine station on Island of Molokai. H-109 planted in 100,000 acres.

1932 First million-ton crop; *bufo marinus,* insectivorous frog, brought to Territory to control pests.

1934 First high speed sugar centrifugals—Waialua.

1935 Long-line irrigation widely adopted by plantations.

1936 First major use of trucks for cane hauling. HSPA insect and plant disease quarantine started on Midway Island.

1937 Expedition to New Guinea to collect wild sugar canes for breeding. Mechanical harvesting begun at Ewa Plantation. Development of "prebaiting" technique of rat control. Research on food yeast from molasses. Mechanical harvesting by "grabs" started—Ewa Plantation.

1939 HSPA insect and plant disease quarantine started on Canton Island.

1941 32-8560 displaces H-109 as leading variety. First precision refractometer for factory control.

1942 New armyworm parasite brought from Texas. Plantation operations subordinated to defense requirements. War brings acute shortage of labor and equipment, resulting in forced use of all known types of mechanization. First bulk sugar plant began operating at Kahului, Maui.

1945 Development of activated diesel oil emulsion for weed control. Organization of the Agricultural Engineering Research Department to consolidate and expand research development. HSPA furnished $100,000 to finance University of Hawaii Agricultural Engineering Institute buildings and equipment. Ion exchange research started. HSPA Activator patented.

1946 Production reduced severely by two-and-a-half month strike.

1947 Plantation railroads rapidly being replaced with trucks. Field testing started on several types of cane cutters. Ion exchange pilot plant in operation.

1948 V-cutter and side mounted cutter for unirrigated cane and 2-line cutter for irrigated cane developed. Chemical weed control with pre-emergence and contact herbicides used on all plantations.

1949 Second bulk sugar plant began operating at Hilo, Hawaii.

1950 First commercial models of HSPA-developed harvesting machines for both irrigated and unirrigated plantations put into operation at three plantations; third bulk sugar plant began operating at Nawiliwili, Kauai; aluminum flumes used on a field scale for irrigation and cane transport. Technical Advisory Committee on By-Products organized; Experimental Statistics department organized.

1951 By-products pilot plant installed at Oahu Sugar Co., Ltd.; direct-mounted cane cutter and infield transport machine for unirrigated plantations developed; 37-1933 replaces 32-8560 as leading cane variety; radioactive materials used in irrigation and fertilization experiments; 40-hour week for half the year established on plantations; first bulk raw sugar shipments made to east coast. Aerial fertilization began.

1952 Cane buggy adopted by Hilo-coast plantations.

1953 First commercial application of liquid nitrogen fertilizer (aqua ammonia) made at Ewa Plantation Co.; Kauai and Maui plantations hit hardest by one of the Territory's worst droughts.

1954 First industry-wide pension plan established; HSPA corrosion inhibitor developed; 124-acre arboretum deeded to the University of Hawaii; HSPA meteorologists participate in Project Shower, "warm" rainfall study.

1955 Bulk sugar storage-loading plant completed at Honolulu.

1956 California and Hawaiian Sugar Company celebrated its fiftieth anniversary. Total half-century production came to nearly 25 million tons of raw sugar refined. Long-term agreement reached providing that Imperial will buy Hawaiian raw sugar to fill a substantial part of its needs.

1957 Regular shipments of Hawaiian raw sugar to Imperial Sugar Company started.

1958 Four-month-long, industry-wide strike drastically reduced production.

1959 Tenth Congress of International Society of Sugar Cane Technologists held in Honolulu.

1960 Variety 44-3098 replaced 37-1933 as leading cane variety.

1961 Production, reduced for three years by the 1958 strike, returned to normal levels.

1962 Hakalau Sugar Company was merged into Pepeekeo Sugar Company, reducing the number of sugar companies to 25. Variety 50-7209 replaced 44-3098 as leading cane variety.

1964 First sugar cane diffuser began commercial operation at Pioneer Mill.

1966 Record raw sugar crop of 1,234,121 tons was produced.

1967 First commercial model of HSPA developed sugar cane dry cleaner tested at Laupahoehoe Sugar Co.

1969 Five-week industry-wide strike over terms of new three-year contracts.

1970 First commercial sugar cane dry cleaner installed at Paauhau Sugar Co. on Hawaii Island.

Part II

U.S. SUGAR INDUSTRY

America's sugar needs are met by a variety of sources, both domestic and foreign. Including Hawaii, 32 states produce sugar. Other states, which do not produce sugar themselves, have sugar refineries.

Florida and Louisiana are the only two states on the U.S. mainland which grow and process sugarcane. The Commonwealth of Puerto Rico also produces sugarcane. Production of these three areas in 1969 was in short tons, raw basis: 532,000, 539,000 and 483,532 respectively.

Foreign sugar, all produced from sugarcane, is supplied by 31 countries. Virtually all of this sugar enters the U.S. through ports on the Gulf and East Coasts.

In 1969, American consumers and businesses consumed 10,654,817 tons of sugar. Of this, 60 percent was domestically produced with the balance supplied by foreign producers.

BEET SUGAR INDUSTRY

About one-third of the sugar consumed in the U.S. is produced from sugarbeets. Grown by small farmers in 29 states, sugarbeets are sold under contract to 12 sugarbeet processing companies operating 59 factories in 19 states.

The first successful sugarbeet processing plant commenced operations near San Francisco, Calif. in 1870.

CANE SUGAR REFINING INDUSTRY

Approximately two-thirds of the sugar consumed in the United States is cane sugar refined in the continental United States. The nation's cane sugar refining industry consists of 24 refineries located principally on the East and Gulf Coasts with one large refinery near San Francisco. Smaller plants and distribution stations are operated principally in the South and Middle West.

Cane sugar refining is one of America's oldest industries, dating back to pre-Revolutionary times. Today, the industry represents a capital investment of almost $500,000,000 in buildings, machinery, docks, land and other physical properties. It provides direct employment to more than 17,500 persons and has an annual payroll in excess of $100,000,000.

Raw cane sugar supplies for the refineries are now obtained from practically all four corners of the globe with the domestic producing areas —Hawaii, Puerto Rico, and on the mainland, Louisiana and Florida—contributing up to 40 per cent. The annual melting (or processing) capacity of the industry is approximately 8,250,000 short tons of raw sugar. According to official statistics, the 1969 volume of melt was 7,368,153 tons.

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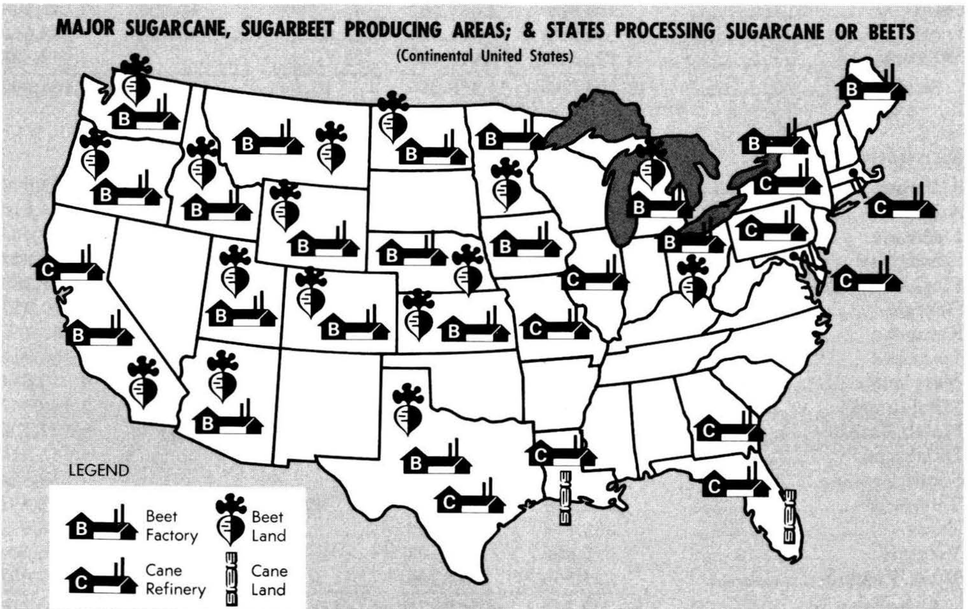

DELIVERIES OF SUGAR IN CONTINENTAL UNITED STATES BY PRIMARY DISTRIBUTORS, CALENDAR YEAR 1969

State and Region	Cane Sugar Refiners	Beet Sugar Processors	Importers of Direct-Consumption Sugar	Mainland Cane Sugar Mills	Total
			Hundredweights[1]		
NEW ENGLAND					
Connecticut	1,215,755	31,869	87,574	600	1,335,798
Maine	495,644	41,831	1,680		539,155
Massachusetts	4,983,500	235,114	59,576	1,200	5,279,390
New Hampshire	378,152	8,726			386,878
Rhode Island	376,552	46,895	19,485		442,932
Vermont	229,570	10,796			240,366
SUB-TOTAL	7,679,173	375,231	168,315	1,800	8,224,519
MID-ATLANTIC					
New Jersey	8,717,799	152,323	714,534	1,500	9,586,156
New York	14,912,156	703,985	799,276	8,800	16,424,217
Pennsylvania	12,002,579	771,095	583,657		13,357,331
SUB-TOTAL	35,632,534	1,627,403	2,097,467	10,300	39,367,704
NORTH CENTRAL					
Illinois	8,499,790	14,384,024	3,400	73,750	22,960,964
Indiana	4,119,385	1,634,481	10,200		5,764,066
Iowa	687,908	1,727,527			2,415,435
Kansas	547,752	1,013,894		4,450	1,566,096
Michigan	3,202,067	4,189,939			7,392,006
Minnesota	464,612	2,508,193		6,000	2,978,805
Missouri	3,359,546	1,808,791		8,250	5,176,587
Nebraska	167,658	1,563,297		2,100	1,733,055
North Dakota	3,798	309,768			313,566
Ohio	7,108,939	3,063,567	2,600	10,000	10,185,106
South Dakota	21,795	321,823			343,618
Wisconsin	1,522,806	2,812,782			4,335,588
SUB-TOTAL	29,706,056	35,338,086	16,200	104,550	65,164,892
SOUTHERN					
Alabama	2,652,127			12,943	2,665,070
Arkansas	1,151,133	124,477			1,275,610
Delaware	1,805,268	41,266	2,870		1,849,404
District of Columbia	414,393	4,131	2,500		421,024
Florida	3,997,521			769,767	4,767,288
Georgia	7,020,276		991	18,585	7,039,852
Kentucky	2,322,398	57,768			2,380,166
Louisiana	3,920,060			46,850	3,966,910
Maryland	4,610,194	48,462	252,981	2,004	4,913,641
Mississippi	1,488,317			20	1,488,337
North Carolina	4,108,562		12,810	1,000	4,122,372
Oklahoma	1,231,209	450,453	1,852		1,683,514
South Carolina	1,868,382		4		1,868,386
Tennessee	4,044,701	5,813	2,117	800	4,053,431
Texas	7,223,174	2,778,639	60	49,580	10,051,453
Virginia	3,015,866	21,101	49,637		3,086,604
West Virginia	855,563	15,104	6,390		877,057
SUB-TOTAL	51,729,144	3,547,214	332,212	901,549	56,510,119

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SUGAR DELIVERIES, BY TYPE OF PRODUCT OR BUSINESS OF BUYER AND BY TYPE OF SUGAR, CALENDAR YEAR 1969[1]

Product or Business of Buyer	Beet (Total)	Cane (Total)	Imported D.C. (Total)	Total All Sugar	Liquid Sugar Included in Totals: Beet	Liquid Sugar Included in Totals: Cane
INDUSTRIAL			(Hundredweights[2] in 000's)			
Bakery, cereal and allied products	10,061	16,483	336	26,880	399	2,703
Confectionery and related products	7,711	12,847	186	20,744	274	3,163
Ice cream and dairy products	4,114	6,380	63	10,558	1,776	4,822
Beverages	10,091	31,827	63	41,981	4,574	22,891
Canned, bottled, frozen foods, jams, jellies and preserves	8,572	9,564	188	18,324	2,952	5,296
Multiple and all other food uses	3,004	5,725	102	8,831	98	1,282
Non-food products	234	1,174	35	1,442	13	477
SUB-TOTAL	43,787	84,001	973	128,760	10,086	40,634
NON-INDUSTRIAL						
Hotels, restaurants, institutions	102	1,720	25	1,846	18	163
Wholesale grocers, jobbers, sugar dealers	11,689	28,802	735	41,225	307	305
Retail grocers, chain stores, super markets	3,955	18,926	983	23,864	86	224
All other deliveries, including deliveries to Government agencies	574	1,403	.5	1,977	52	68
SUB-TOTAL	16,319	50,851	1,743	68,913	463	761
TOTAL DELIVERIES	60,106	134,852	2,716	197,673	10,549	41,395
Deliveries in consumer-size packages (less than 50 lbs.)	8,515	39,602	1,002	49,119	....	....
Deliveries in bulk (unpackaged)	25,421	26,655	.6	52,087	....	....

[1]Represents approximately 98.7 percent of deliveries by primary distributors in continental United States. [2]Reported as produced or imported and delivered except liquid sugar which is on a sugar solids content basis.
Source: Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture.

CONTINUED FROM PRECEDING PAGE—

Deliveries, Sugar, Continental U.S., by Primary Distributors

State and Region	Cane Sugar Refiners	Beet Sugar Processors	Importers of Direct-Consumption Sugar	Mainland Cane Sugar Mills	Total
WESTERN		Hundredweights[1]			
Alaska	33,883	29,663	....	....	63,546
Arizona	377,958	392,055	46,286	....	816,299
California	9,183,369	12,422,511	....	600	21,606,480
Colorado	289,532	1,362,112	....	....	1,651,644
Idaho	43,718	345,339	....	....	389,057
Montana	43,212	286,863	....	....	330,075
Nevada	102,832	39,153	....	....	141,985
New Mexico	76,082	185,299	8,700	....	270,081
Oregon	706,492	1,472,892	....	....	2,179,384
Utah	100,920	704,418	46,714	400	852,452
Washington	792,913	1,898,875	....	....	2,691,788
Wyoming	11,737	78,479	....	....	90,216
SUB-TOTAL	11,762,648	19,217,659	101,700	1,000	31,083,007
GRAND TOTAL	136,509,555	60,105,593	2,715,894	1,019,199	200,350,241

[1]Reported as produced or imported and delivered except liquid sugar which is on a sugar solids content basis.
Source: Agricultural Stabilization and Conservation Service, U.S. Department of Agriculture.

SUGARBEETS: ACREAGE, PRODUCTION, SEASON AVERAGE PRICE PER TON RECEIVED BY FARMERS AND VALUE; PRODUCTION OF BEET SUGAR AND MOLASSES PULP, UNITED STATES, 5-YEAR INTERVALS 1915-1935 — ANNUAL 1935-1969

Year	Acreage Planted	Acreage Harvested	Average Yield Per Acre	Production	Price[3]	Farm value[3]	Sugar produced (refined basis)	Molasses pulp
	1,000 acres	1,000 acres	Short tons	1,000 short tons	Dollars Per Ton	1,000 Dollars	1,000 short tons	1,000 short tons
1915	664	611	10.7	6,511	5.67	36,950	874	....
1920	978	872	9.8	8,538	11.63	99,324	1,089	....
1925	781	648	11.4	7,381	6.39	47,137	913	....
1930	821	776	11.9	9,199	7.14	65,698	1,208	150
1935	809	763	10.4	7,908	5.76	45,565	1,185	125
1936	855	776	11.6	9,028	6.05	54,636	1,304	157
1937	813	753	11.6	8,759	5.26	46,101	1,283	166
1938	985	925	12.4	11,497	4.65	53,478	1,674	219
1939	993	918	11.7	10,781	4.76	51,342	1,641	175
1940	971	912	13.4	12,194	5.11	62,287	1,758	182
1941	796	755	13.7	10,342	6.43	66,522	1,488	176
1942	1,048	954	12.2	11,685	6.84	79,905	1,617	149
1943	619	550	11.9	6,547	8.81	57,674	935	92
1944	633	555	12.1	6,718	10.60	71,156	979	72
1945	775	713	12.1	8,616	10.20	87,539	1,191	121
1946	905	802	13.2	10,582	11.10	117,840	1,422	153
1947	968	879	14.2	12,503	11.80	148,080	1,719	203
1948	800	694	13.6	9,424	10.60	99,639	1,280	199
1949	768	687	14.8	10,196	10.80	110,369	1,461	204
1950	1,014	925	14.6	13,535	11.20	151,293	1,878	293
1951	758	691	15.2	10,482	11.70	122,483	1,448	231
1952	719	665	15.3	10,169	12.00	121,970	1,407	253
1953	794	745	16.2	12,084	11.60	140,364	1,697	324
1954	964	876	16.1	14,082	10.80	152,151	1,909	355
1955	798	740	16.5	12,228	11.20	136,477	1,625	354
1956	831	785	16.6	12,993	11.90	155,087	1,837	428
1957	918	880	17.7	15,530	11.20	174,261	2,050	480
1958	935	891	17.0	15,150	11.70	177,807	2,056	484
1959	955	905	18.8	17,015	11.20	191,186	2,187	591
1960	977	957	17.2	16,421	11.60	190,109	2,291	613
1961	1,129	1,077	16.4	17,704	11.20	197,547	2,247	712
1962	1,182	1,103	16.5	18,254	12.80	233,243	2,417	676
1963	1,285	1,235	18.9	23,328	12.20	285,011	2,893	1,004
1964	1,460	1,395	16.8	23,389	11.80	275,660	3,073	1,114
1965	1,314	1,249	16.8	20,915	11.95	249,836	2,705	989
1966	1,240	1,161	17.5	20,342	12.80	260,355	2,643	933
1967	1,197	1,122	17.1	19,197	13.55	260,114	2,464	923
1968	1,476	1,410	18.0	25,363	13.81	350,207	3,255	1,292
1969[4]	1,647	1,541	18.0	27,800	13.30	369,740	3,121	N.A.

[1]Most years from 1915 to 1923 include a small unknown quantity of beets grown in Canada for Michigan factories. [2]Basis of Crop Year including beets planted in previous fall in California and Arizona. [3]Includes production incentive payments which were payments made to producers of sugarbeets and sugarcane by the Commodity Credit Corporation during the period of government price control in World War II, to stimulate production, but excludes Sugar Act payments. [4]Preliminary. N.A.—Not available.
Source: Statistical Reporting Service, U.S. Department of Agriculture.

Continued from Page 15

The 18 operating companies and the location of their refineries are as follows:

Sucrest Corporation	Brooklyn, N.Y. Chicago, Ill.
American Sugar Co.	Boston, Mass. Brooklyn, N.Y. Philadelphia, Pa. Baltimore, Md. Chalmette, La.
J. Aron & Co., Inc.	Supreme, La.
California & Hawaiian Sugar Co.	Crockett, Calif. Aiea, Hawaii
Colonial Sugars Co.	Gramercy, La.
Everglades Sugar Refinery, Inc.	Clewiston, Fla.
Florida Sugar Refinery, Inc.	Belle Glade, Fla.
Glades County Sugar Grower Cooperative Assoc.	Moore Haven, Fla.
Godchaux-Henderson, Inc.	Reserve, La.
Imperial Sugar Co.	Sugar Land, Texas
Industrial Sugars, Inc.	St. Louis, Mo.
The National Sugar Refining Co.	Philadelphia, Pa.
Pepsico Co.	Long Island City, N.Y.
Refined Syrups & Sugars, Inc.	Yonkers, N.Y.
Revere Sugar Refinery	Charlestown, Mass.
Savannah Sugar Refining Corp.	Port Wentworth, Ga.
The South Coast Corp.	Mathews, La.
Southdown, Inc.	Houma, La.

Source: United States Cane Sugar Refiners' Association.

BEET SUGAR PRODUCTION IN THE UNITED STATES—1965 TO 1969
(Hundredweight, refined)

State	1969[1]	1968	1967	1966	1965	Average[2] 1965 to 1969	Per Cent
California	16,314,519	16,253,094	10,167,298	13,234,481	14,764,916	14,146,862	24.50
Idaho	7,521,358	7,382,771	5,967,710	4,964,775	6,509,192	6,469,161	11.21
Colorado	6,903,300	9,070,429	7,739,979	8,087,400	7,810,542	7,922,330	13.72
Minnesota	4,784,928	4,646,989	3,814,006	3,851,762	3,120,518	4,043,641	7.00
Washington	4,538,724	3,717,507	2,782,500	3,414,451	3,651,539	3,620,944	6.27
Montana	3,417,360	3,361,747	3,217,765	3,113,022	2,278,077	3,077,594	5.33
Michigan	3,406,733	3,229,642	2,854,795	2,893,539	2,263,762	2,929,694	5.08
Nebraska	3,049,424	3,056,543	2,125,020	2,954,383	2,262,884	2,689,651	4.66
Wyoming	2,572,440	2,537,803	2,184,938	1,915,702	1,566,570	2,155,491	3.74
Oregon	2,261,500	2,610,273	2,291,747	2,197,584	2,341,609	2,340,543	4.05
N. Dakota	1,870,117	1,485,147	1,341,353	1,301,343	805,762	1,360,744	2.36
Utah	1,599,994	1,702,086	1,462,554	1,485,345	1,685,534	1,587,103	2.75
Ohio	1,560,987	1,921,940	1,256,655	1,540,874	1,489,899	1,554,071	2.69
Arizona	925,000	869,566	685,973	271,532	....	688,018	1.19
Texas	890,686	1,950,124	1,581,836	1,316,937	1,661,714	1,480,259	2.56
Iowa	766,659	619,419	577,786	625,865	562,698	630,485	1.09
Kansas	633,797	858,898	....	....	....	746,348	1.29
Maine	446,580	220,923	112,207	19,427	....	199,784	.35
New York	....	104,973	78,195	104,651	82,042	92,465	.16
TOTAL—Cwt.	63,464,106	65,599,874	50,242,317	53,293,073	52,857,258	57,735,188	100.00
TOTAL—Short tons raw value	3,395,330	3,509,593	2,687,964	2,851,179	2,827,863	3,096,155	

[1]Partly estimated. [2]Where there has been production in a State less than 5 years, the average is for the years of actual production.

Statistics by crop year, which is for spring planting and fall harvesting in first year named, except in Imperial Valley of California, where figure is for fall planting in first year named and spring harvesting in following year. Sugar Beets are grown also in Illinois, Indiana, and New Mexico and processed in plants located in states listed above.

Source: United States Beet Sugar Association, Washington, D.C.

LOUISIANA—SUGAR PRODUCTION—ACREAGE—YIELD

Crop Year	Sugarcane Used for Sugar: Acreage harvested (1000 acres)	Sugarcane Used for Sugar: Average yield of cane per acre (Tons)	Sugarcane Used for Sugar: Production (1,000 tons)	Sugar Produced: Raw Value Basis[1] (In thousands of short tons)	Sugar Produced: Equivalent refined[2]	Raw Sugar 96° made per ton of sugarcane (Pounds)[1]
1919-20......	179	10.5	1,883	124	116	132
1920-21......	183	13.6	2,493	173	162	139
1921-22......	226	18.5	4,181	331	309	158
1922-23......	242	15.6	3,778	301	281	159
1923-24......	215	11.1	2,387	165	154	138
1924-25......	163	7.5	1,228	90	84	147
1925-26......	190	13.9	2,644	142	133	107
1926-27......	128	6.8	864	48	45	111
1927-28......	73	13.2	962	72	67	150
1928-29......	130	14.3	1,860	135	126	145
1929-30......	185	15.8	2,918	204	190	140
1930-31......	175	14.6	2,559	188	176	147
1931-32......	169	13.2	2,232	160	150	143
1932-33......	208	13.9	2,886	228	213	158
1933-34......	197	13.2	2,600	209	195	161
1934-35......	222	14.3	3,164	234	219	148
1935-36......	239	17.5	4,183	339	317	162
1936-37......	227	21.4	4,854	386	361	156
1937-38......	266	19.7	5,241	401	375	153
1938-39......	272	21.5	5,859	491	459	168
1939-40......	234	21.7	5,084	436	408	172
1940-41......	211	13.8	2,923	234	219	160
1941-42......	224	17.6	3,947	322	301	163
1942-43......	269	17.6	4,734	397	371	168
1943-44......	257	20.9	5,388	432	404	160
1944-45......	246	20.0	4,929	369	345	150
1945-46......	234	21.9	5,128	370	346	144
1946-47......	255	17.6	4,484	331	309	148
1947-48......	259	15.1	3,917	297	277	152
1948-49......	274	19.2	5,257	393	367	150
1949-50......	279	17.9	4,984	414	387	166
1950-51......	273	19.5	5,312	451	421	170
1951-52......	258	17.3	4,463	295	276	132
1952-53......	274	20.7	5,667	451	422	159
1953-54......	280	20.6	5,759	479	448	166
1954-55......	247	22.8	5,625	478	447	170
1955-56......	232	24.4	5,664	454	425	161
1956-57......	203	23.7	4,817	429	401	178
1957-58......	226	22.0	4,976	396	370	159
1958-59......	219	22.0	4,869	443	414	182
1959-60......	250	20.3	5,073	440	411	174
1960-61......	255	21.9	5,583	470	439	169
1961-62......	277	25.7	7,118	650	607	183
1962-63......	254	20.9	5,315	472	441	178
1963-64......	296	28.9	8,554	759	709	177
1964-65......	325	22.7	7,383	573	536	155
1965-66......	288	22.7	6,542	550	515	157
1966-67......	288	22.7	6,563	564	527	171
1967-68.....	294	27.6	8,110	740	692	182
1968-69.....	282	26.1	7,377	669	625	181
1969-70*...	235	24.0	5,644	537	502	178

* Preliminary.
[1] Production reported on 96° basis prior to 1934, raw value basis thereafter.
[2] Raw value multiplied by 0.9346.
Source: Agricultural Stabilization and Conservation Service, U. S. Department of Agriculture.

FLORIDA — SUGAR PRODUCTION — ACREAGE — YIELDS

Crop Year	Sugarcane Used for Sugar			Sugar Produced		Raw Sugar 96° made per ton of sugarcane (Pounds)[1]
	Acreage harvested (1000 acres)	Average yield of cane per acre (Tons)	Production (1,000 tons)	Raw Value Basis[1] (In thousands of short tons)	Equivalent refined[2]	
1928-29	0.7	18.6	13	1	1	115
1929-30	7	30.1	202	14	14	143
1930-31	12	28.8	351	27	25	152
1931-32	13	22.3	292	24	22	164
1932-33	13	33.4	421	37	35	177
1933-34	14	32.6	469	41	38	177
1934-35	14	27.8	383	28	26	148
1935-36	14	34.5	486	43	40	176
1936-37	17	34.0	565	52	48	184
1937-38	19	33.0	634	58	54	183
1938-39	24	36.4	882	93	87	211
1939-40	20	35.5	714	70	65	197
1940-41	29	32.1	933	98	91	209
1941-42	31	30.7	944	94	88	198
1942-43	21	30.6	648	61	57	187
1943-44	27	25.7	699	65	60	185
1944-45	27	28.8	780	69	64	176
1945-46	31	33.2	1,041	100	93	192
1946-47	32	32.6	1,037	94	88	181
1947-48	35	26.7	921	80	75	173
1948-49	35	28.7	1,010	80	75	158
1949-50	37	30.8	1,126	105	98	186
1950-51	37	31.3	1,169	109	102	186
1951-52	39	32.4	1,260	122	114	195
1952-53	43	34.9	1,495	154	144	207
1953-54	45	32.6	1,453	151	141	207
1954-55	39	32.6	1,258	132	123	210
1955-56	35	33.4	1,160	118	110	204
1956-57	30	39.7	1,197	128	120	214
1957-58	33	41.7	1,358	135	126	201
1958-59	34	37.8	1,303	135	126	208
1959-60	46.4	38.2	1,771	175	164	198
1960-61	48.9	31.8	1,554	160	150	205
1961-62	56.2	36.2	2,036	208	194	204
1962-63	114.3	35.4	4,050	380	355	188
1963-64	142.5	31.2	4,446	424	396	191
1964-65	219.8	29.3	6,439	574	536	178
1965-66	185.4	29.1	5,505	554	518	201
1966-67	190.7	31.8	6,057	652	609	215
1967-68	190.6	34.3	6,542	717	670	219
1968-69	182.1	29.5	5,368	546	510	203
1969-70*	154.0	33.7	5,196	532	497	205

* Preliminary.
[1] Production reported on 96° basis prior to 1934, raw value basis thereafter.
[2] Raw value multiplied by 0.9346.
Source: Agricultural Stabilization and Conservation Service, U. S. Department of Agriculture.

CANE SUGAR: PRODUCTION IN THE PHILIPPINE ISLANDS, 1921-1969

Crop Year[1]	Sugarcane: Acreage: Total[2]	Sugarcane: Acreage: Harvested for centrifugal sugar	Sugarcane: Calculated production for centrifugal sugar: Per acre[3]	Sugarcane: Calculated production for centrifugal sugar: Total[4]	Sugar Produced: Centrifugal as made	Sugar Produced: Muscovada and Panocha	Sugar Produced: Centrifugal sugar made per ton sugarcane[5]	Molasses: Produced
	1,000 acres	1,000 acres	Short tons	1,000 short tons	1,000 short tons	1,000 short tons	Pounds	1,000 gallons
1921	595	......	....	1,981	219	314	221	5,597
1922	562	......	....	2,106	259	217	246	2,609
1923	561	......	....	2,717	325	204	239	786
1924	592	......	....	4,954	552	228	223	1,277
1925	573	......	....	3,445	408	200	237	1,568
1926	587	......	....	5,023	587	180	234	1,153
1927	586	......	....	5,483	635	173	232	2,959
1928	637	......	....	6,771	769	157	227	5,405
1929	640	417	17.63	7,351	867	117	236	6,675
1930	633	387	20.20	7,816	871	87	223	11,817
1931	625	458	21.36	9,781	1,100	74	225	11,407
1932	663	512	22.36	11,449	1,285	58	224	25,372
1933	756	559	25.67	14,350	1,598	55	223	68,166
1934	522	325	18.59	6,044	700	54	232	52,993
1935	620	425	19.05	8,095	979	64	242	46,740
1936	635	436	21.87	9,535	1,118	68	234	52,836
1937	563	453	20.53	9,302	1,055	61	227	49,955
1938	568	392	23.54	9,227	1,092	57	237	49,448
1939	590	412	21.35	8,810	1,044	63	237	50,578
1940	551	373	23.42	8,734	1,035	113	237	49,163
1941-44				not available				
1945	72	16	7.31	117	13	56	222	546
1946	101	48	15.96	766	85	54	222	3,579
1947	203	182	19.70	3,586	398	38	222	16,972
1948	319	297	20.74	6,160	730	35	237	31,165
1949	346	316	19.18	6,062	693	36	229	28,469
1950	417	382	21.41	8,177	935	51	229	37,988
1951	496	466	21.36	9,952	1,077	62	216	51,957
1952	547	517	20.21	10,477	1,134	68	217	50,312
1953	655	545	23.92	13,038	1,434	76	220	64,082
1954	661	528	23.71	12,516	1,372	58	219	62,421
1955	596	468	23.23	10,871	1,219	60	224	49,108
1956	580	444	22.39	9,941	1,143	73	230	41,812
1957	599	463	25.30	11,712	1,378	75	235	60,091
1958	623	484	27.82	13,467	1,512	78	225	68,184
1959	597	504	27.29	13,754	1,529	64	222	66,053
1960	584	525	24.64	12,941	1,563	70	241	63,194
1961	592	535	26.74	14,306	1,618	41	226	67,547
1962	640	588	26.99	15,685	1,714	50	219	83,553
1963	760	722	24.13	17,421	1,856	52	213	101,480
1964	904	849	20.90	17,747	1,767	70	199	100,239
1965	790	735	19.92	14,641	1,590	64	217	79,042
1966	769	707	21.61	15,277	1,718	62	225	83,057
1967	810	756	20.52	15,512	1,759	63	227	94,215
1968[6]	810	756	20.83	15,750	1,755	68	223	103,019
1969	880	830	22.28	18,500	2,000	65	216	110,511

[1] Harvesting begins in October. The length of the growing season being about 11 months.
[2] Total harvested acreage includes acreage for both centrifugal and noncentrifugal sugar. The acreage for noncentrifugal sugar has been estimated on the assumption 1 acre of cane yields about 1.5 tons of noncentrifugal sugar for the year 1949.
[3] Cane production divided by harvested acreage.
[4] Prior to 1950, calculated cane production is the quantity of cane ground for centrifugal sugar, estimated on the basis of the reported yield of sugar per ton of cane. From 1950 to date, the cane production is reported.
[5] As reported prior to 1950 and from 1952 to 1957. Other years computed.
[6] Preliminary.

Source: Foreign Agricultural Service, U. S Department of Agriculture.

CANE SUGAR: PRODUCTION IN CUBA

Crop Year[1]	Acreage in cane		Sugarcane harvested		Raw sugar produced	
	Grown	Harvested	Per acre	Total[2]	Total[3]	Per ton of sugarcane[2]
	1,000 acres	1,000 acres	Short Tons	1,000 short tons	1,000 short tons	Pounds
1920...	2,085	2,041	18.78	38,335	4,243	221
1921...	2,145	1,957	21.17	41,435	4,469	216
1922...	2,100	1,910	20.38	38,917	4,581	235
1923...	1,800	1,768	20.00	35,366	4,141	234
1924...	2,200	2,152	18.55	39,917	4,671	234
1925...	2,695	2,469	21.09	52,068	5,894	226
1926...	3,300	2,694	18.11	48,783	5,602	230
1927...	3,310	2,211	20.46	45,243	5,121	226
1928...	3,275	2,212	17.71	39,148	4,591	235
1929....	2,700	2,625	18.18	47,718	5,857	245
1930....	2,800	2,648	16.40	43,435	5,305	244
1931....	2,794	1,613	17.75	28,632	3,545	248
1932....	2,387	1,145	23.12	26,480	2,958	223
1933....	1,925	1,138	17.21	19,587	2,266	231
1934....	1,971	1,647	13.44	22,136	2,562	231
1935....	1,974	1,643	15.12	24,847	2,883	232
1936....	2,229	1,742	15.85	27,616	2,904	210
1937....	2,392	1,792	19.17	34,346	3,379	197
1938....	2,328	1,606	18.17	29,177	3,380	232
1939....	2,315	1,769	15.99	28,282	3,094	219
1940....	2,325	1,883	16.58	31,220	3,157	202
1941....	2,294	1,847	17.87	33,010	2,734	166
1942....	2,172	2,093	17.45	36,525	3,800	208
1943....	2,402	1,597	15.85	25,309	3,230	255
1944....	2,496	2,392	18.94	45,314	4,741	209
1945....	2,528	2,343	12.90	30,224	3,923	260
1946....	2,645	2,517	14.64	36,859	4,476	243
1947....	2,845	2,774	18.96	52,584	6,448	245
1948....	3,025	2,921	18.58	54,270	6,675	246
1949....	2,980	2,922	15.74	45,999	5,763	251
1950....	3,014	2,885	16.26	46,916	6,126	261
1951....	3,117	3,096	16.00	49,539	6,348	256
1952....	3,521	3,474	18.89	65,629	7,964	243
1953....	3,921	2,156	20.86	44,984	5,687	253
1954....	3,331	2,310	18.75	43,317	5,391	249
1955....	3,554	2,059	18.64	38,381	5,001	261
1956....	3,252	2,416	16.89	40,798	5,229	256
1957....	3,196	3,110	15.93	49,533	6,252	252
1958....	3,500	3,138	16.06	50,393	6,373	253
1959....	3,526	3,296	16.06	52,920	6,577	249
1960....	3,457	3,104	16.82	52,212	6,462	247
1961....	N. A.	3,113	N. A.	N. A.	7,459	N. A.
1962...	N. A.	N. A.	N. A.	N. A.	5,308	N. A.
1963...	N. A.	N. A.	N. A.	N. A.	4,211	N. A.
1964...	N. A.	N. A.	N. A.	N. A.	4,400	N. A.
1965...	N. A.	N. A.	N. A.	N. A.	6,600*	N. A.
1966...	N. A.	N. A.	N. A.	N. A.	6,200*	N. A.
1967...	N. A.	N. A.	N. A.	N. A.	6,874*	N. A.
1968..	N.A.	N.A.	N.A.	N.A.	5,869*	N.A.
1969..	N.A.	N.A.	N.A.	N.A.	6,100*	

* International Sugar Council.

[1] Harvesting usually begins in January and extends through June. The length of the growing season is normally 12 months.

[2] Some years cane for invert molasses is included in the cane production.

[3] Excludes liquid and green sugar.

N. A.—Not available.

Source: Foreign Agricultural Service, U.S. Department of Agriculture.

EDIBLE SIRUPS: UNITED STATES PRODUCTION, FOREIGN TRADE, AND INDICATED DOMESTIC CONSUMPTION, 1935-39, 1940-1944 AND 1945-49 AVERAGES, AND 1950-69

(000 GALLONS)

	PRODUCTION[1]								IMPORTS				
	SIRUPS												
Year	Corn	Cane	Sorghum	Maple[2]	Refiners	Edible Molasses	Honey	Total	Maple Sirup	Edible Molasses and Cane Sirup[3]	Honey	Shipments from Territories Honey	Total
1935-39	91,110	22,855	14,328	2,723	2,930	4,970	15,343	154,259	101	2,048	15	182	2,346
1940-44	137,377	18,741	11,409	2,571	7,804	6,273	16,709	200,884	268	4,083	1,429	135	5,915
1945-49	143,145	20,255	8,851	1,510	11,648	8,971	18,842	213,222	319	1,074	1,275	89	2,757
1950	130,448	9,745	3,539	2,006	4,005	3,314	19,780	172,837	479	2,214	1,020	30	3,743
1951	131,831	8,775	3,671	1,742	4,971	4,339	21,923	177,252	323	2,050	692	[4]	3,065
1952	127,405	5,510	2,856	1,603	3,405	3,284	23,091	167,154	522	5,710	720	....	6,952
1953	131,767	5,540	2,418	1,208	3,907	4,077	18,996	167,913	442	1,793	831	....	3,066
1954	133,071	4,805	2,552	1,672	3,814	2,958	18,372	167,244	371	2,015	777	....	3,163
1955	138,226	4,730	2,405	1,578	3,853	2,820	21,666	175,278	457	2,305	837	....	3,599
1956	141,504	4,990	3,594	1,529	3,882	3,193	18,169	176,861	643	2,046	406	....	3,095
1957	142,089	3,965	2,516	1,697	3,620	2,384	20,447	176,748	757	573	404	....	1,734
1958	153,481	3,135	2,282	1,392	4,892	2,553	22,116	189,851	656	1,286	335	....	2,277
1959	162,197	3,617	2,286	1,137	3,999	3,084	20,083	196,403	691	2,138	383	....	3,212
1960	169,776	3,676	1,943	1,143	4,134	2,714	20,611	203,997	908	1,884	1,049	....	3,841
1961	180,397	3,519	....	1,524	3,846	3,379	21,721	214,386	904	911	768	....	2,583
1962	201,259	3,303	....	1,460	2,691	3,075	21,189	232,977	929	3,827	604	....	5,360
1963	215,573	2,702	....	1,143	2,769	2,772	22,647	247,606	1,068	1,706	221	....	2,995
1964	238,832	2,814	....	1,546	2,862	2,685	21,323	270,062	666	2,119	417	....	3,202
1965	243,682	2,989	....	1,266	2,994	2,648	20,654	274,233	879	3,349	1,127	....	5,355
1966	252,337	2,923	....	1,476	2,493	2,563	20,916	282,708	938	3,061	806	....	4,805
1967	255,860	2,121	....	979	2,402	2,477	18,860	282,699	1,147	1,065	1,416	....	3,628
1968	[7]	2,346	....	983	2,561	2,466	16,899	25,255	988	3,732	1,427	....	6,147
1969[5]	[7]	2,661	....	1,032	2,235	2,532	23,925	32,385	1,185	2,266	1,244	....	4,695

	EXPORTS				INDICATED DOMESTIC CONSUMPTION					
					SIRUPS					
Year	Corn Sirup	Edible Molasses and Sirup including Maple[5]	Honey	Total	Corn	Maple	Sorghum	Cane Sirup, Refiners Sirup, and Edible Molasses	Honey	Total
1935-39	3,027	765	191	3,983	88,083	2,824	14,328	32,038	15,349	152,622
1940-44	2,792	482	78	3,352	134,585	2,839	11,409	36,419	18,195	203,447
1945-49	3,220	1,108	244	4,572	139,925	1,830	8,851	40,840	19,944	211,390
1950	3,761	242	801	4,804	126,687	2,485	3,539	19,036	20,029	171,776
1951	4,287	231	1,075	5,593	127,544	2,065	3,671	19,904	21,540	174,724
1952	3,101	153	1,968	5,222	124,304	2,125	2,856	17,756	21,843	168,884
1953	3,241	267	2,789	6,297	128,526	1,650	2,418	15,050	17,038	164,682
1954	3,233	272	2,061	5,566	129,838	2,043	2,552	13,320	17,088	164,841
1955	3,386	248	1,739	5,373	134,840	2,035	2,405	13,460	20,764	173,504
1956	3,189	249	1,548	4,986	138,315	2,172	3,594	13,862	17,027	174,970
1957	2,745	250	1,681	4,676	139,344	2,454	2,516	10,292	19,200	173,806
1958	2,396	165	1,902	4,463	151,085	2,048	2,282	11,701	20,549	187,665
1959	2,245	155	1,062	3,462	159,952	1,828	2,286	12,683	19,404	196,153
1960	1,836	182	797	2,815	167,940	2,051	1,943	12,226	20,863	205,023
1961	1,370	173	607	2,150	179,027	2,428	....	11,482	21,882	214,819
1962	1,514	140	1,158	2,812	199,745	2,389	....	12,756	20,635	235,525
1963	2,055	192	2,125	4,372	213,518	2,211	....	9,757	20,743	246,229
1964	1,632	205	760	2,597	237,200	2,212	....	10,275	20,980	270,667
1965	1,003	[6]	1,166	2,169	242,679	2,145	....	11,980	20,615	277,419
1966	1,038	[6]	1,219	2,257	251,299	2,414	....	11,040	20,503	285,256
1967	1,113	[6]	986	2,099	254,747	2,126	....	8,065	19,290	284,228
1968	[7]	1,082	684	1,766	[7]	1,971	....	10,023	17,642	29,636
1969[5]	[7]	2,334	833	3,167	[7]	2,217	....	7,360	24,336	33,913

[1]Production of cane sirup, sorghum sirup, and edible molasses is of the fall of the preceding year. [2]Does not include varying quantities produced on nonfarm lands in Somerset County, Maine. [3]U.S. Department of Commerce series, molasses and sugar sirups, less liquid sugar as reported to Sugar Division, Agricultural Stabilization and Conservation Service. [4]Beginning 1951, discontinued. [5]Preliminary. [6]Assumed to be largely refiners' sirup. Beginning 1965, data not available because of change in export classification. [7]N.A.

Source: Economic Research Service, U.S. Department of Agriculture.

Part III

U.S. SUGAR LAWS

Laws governing sugar in the United States are as old as the country itself. Following is a brief review.

SUGAR'S TAXATION HISTORY

Sugar is one of the world's most regulated commodities. Approximately 90 percent of total world production comes under some type of internal or external law or regulation.

Sugar in the United States has been under government regulation since the American Revolution.

The first piece of general legislation enacted by the first U.S. Congress in 1789 was the first sugar tariff of the United States.

It provided for a duty of one cent per pound on brown sugars; three cents on loaf; and, one and one-half cents on all other types of sugars.

From that time on, sugar tariffs provided a major source of revenue until the imposition of Federal income and corporate taxes.

Accordingly, the rates had a tendency to fluctuate somewhat depending upon the condition of the national treasury.

Because the purity of present-day refined sugars was unknown in the early days of the republic, complex tables of rates were required to assess the widely varying qualities of sugar which came into the U.S. from many parts of the world.

The Tariff Act of 1816 taxed loaf sugar at 12 cents per pound. There were other high tariffs during the Civil War period, after which tariff rates generally declined.

The Reciprocity Treaty of 1875 between the Kingdom of Hawaii and the United States provided for free entry of Hawaiian Sugar. Annexation in 1898 made Hawaii a domestic producer.

For four years beginning in 1890, sugar was placed on the free lists, and a bounty to encourage production was paid to domestic producers. Louisiana growers benefited most from this as the beet sugar industry was just getting underway and Hawaii was not yet a part of the United States.

The Spanish American War, beginning in 1898, had a major influence on American sugar supplies.

Puerto Rico in 1900 was given a preferential reduction in tariff charges. A year later, her sugar was placed on the free list.

The Philippines in 1902 received a 25 percent preferential tariff reduction. In 1909, she was permitted free entry on the first 300,000 tons of sugar exported to the U.S. In 1914, all of her sugar sales to the U.S. were placed on the free list.

Cuba in 1903 received a preferential tariff reduction of 20 percent below the full world tariff rate. Up to the early 1960's, Cuba retained a preferred tariff position among foreign suppliers of the American market. Cuba was considered America's sugar warehouse.

Because of political developments within Cuba and that country's slide into the Communist orbit, diplomatic relations between Cuba and the U.S. were severed in 1961 and its quota subsequently allocated to other suppliers on a formula basis established by Congress.

The Philippines, granted independence by the United States in 1946, stayed on the free list until December 31, 1955. Its preferential tariff treatment phases out in 1974 at which time it will pay the standard tariff rate.

U.S. DUTIES ON FOREIGN SUGAR

Excluding those areas which have received preferential treatment, the tariff duty paid by other suppliers of the U.S. market has been changed eight times over the years since 1897 when it was set at 1.685 cents per pound. It dipped slightly in the 1914-21 period and then

SUGAR — LOW PRICED FOOD

The average American must work only 2.4 minutes to earn enough money to purchase a pound of refined sugar at retail. This is the lowest amount of time of any but one modern country in the world. In the other country—Canada—only 2/10's of a minute less time is required.

WORK TIME NEEDED TO PURCHASE ONE POUND SUGAR AT RETAIL, 1968

Country	Avg. Hourly Earnings in Mfg.[1] U.S. Dollars	U.S. Cents Per Min.	Retail Price for Sugar 1968[2] (U.S. Cts.)	Minutes Worked Per Lb. of Sugar	Index U.S.= 100
U.S.	$3.01	5.02¢	12.2¢	2.4	100
Canada	2.39	3.98	8.9	2.2	92
Japan	0.57	0.95	16.1	16.9	704
Austria	0.73	1.22	11.9	9.8	408
Belgium	1.06	1.77	15.5	8.8	367
Denmark	1.79	2.98	13.5	4.5	188
Finland	1.02	1.70	13.1	7.7	321
France	0.88	1.47	13.1	8.9	371
Italy	0.73	1.22	17.1	14.0	583
Netherlands	1.02	1.70	15.6	9.2	383
Norway	1.57	2.62	6.3	2.4	100
Sweden	1.91	3.18	13.0	4.1	171
Switzerland	1.31	2.18	9.3	4.3	179
U.K.	1.03	1.72	8.5	4.9	204
W. Germany	1.22	2.03	14.0	6.9	288

[1] U.S. Dept. of Labor—Division of Foreign Labor Statistics—available only for developed countries.
[2] International Sugar Council.

U. S. SUGAR CONSUMPTION* AND POPULATION

Five Year Intervals—1863-1928

Year	Total Sugar Consumption* (Short tons, raw value)	Population** (000's)	Per Capita Consumption (Pounds, refined value)
1863....	317,018	33,365	17.76
1868....	579,551	36,973	29.30
1873....	897,072	41,677	40.23
1878....	926,929	47,598	36.40
1883....	1,402,577	53,693	48.83
1888....	1,746,385	59,974	54.43
1893....	2,283,985	66,970	63.75
1898....	2,400,278	73,494	61.05
1903....	3,055,492	80,983	70.52
1908....	3,817,849	89,073	80.11
1913....	4,485,778	96,512	86.88
1918....	4,189,134	103,588	75.59
1923....	5,729,172	111,537	96.01
1928....	6,658,400	119,862	103.83

Yearly Intervals—1929-1969

Year	Total Sugar Consumption* (Short tons, raw value)	Population** (000's)	Per Capita Consumption (Pounds, refined value)
1929....	6,835,360	121,526	105.13
1930....	6,857,760	123,077	104.15
1931....	6,702,080	124,039	100.99
1932....	6,438,880	124,840	96.40
1933....	6,387,041	125,579	95.07
1934....	6,331,585	126,374	93.64
1935....	6,633,928	127,250	97.44
1936....	6,706,195	128,053	97.89
1937....	6,671,402	128,825	96.79
1938....	6,643,253	129,825	95.64
1939....	6,867,518	130,880	98.08
1940....	6,890,668	132,122	97.49
1941 (a)	8,069,457	133,402	113.06 (a)
1942....	5,466,204	134,860	75.76
1943....	6,334,713	136,739	86.59
1944....	7,147,350	138,397	96.53
1945....	6,040,569	139,928	80.69
1946....	5,620,708	141,389	74.31
1947....	7,447,834	144,126	96.59
1948....	7,342,971	146,631	93.61
1949....	7,580,225	149,188	94.97
1950....	8,279,330	151,683	102.02
1951....	7,736,573	154,360	93.68
1952....	8,104,160	157,028	96.47
1953....	8,484,900	159,636	99.35
1954....	8,206,606	162,417	94.44
1955....	8,399,081	165,270	94.99
1956....	8,903,877	168,176	98.96
1957....	8,733,988	171,399	95.24
1958....	9,030,271	174,277	96.85
1959....	9,181,146	177,210	96.84
1960....	9,260,833	180,043	96.14
1961....	9,610,929	183,097	98.11
1962....	9,751,927	185,963	98.02
1963....	9,988,831	188,732	98.93
1964....	9,670,693	191,408	94.44
1965....	10,020,287	193,882	96.60
1966....	10,299,344	196,180	98.13
1967....	10,245,342	198,384	96.54
1968....	10,927,340	200,377	101.93
1969....	10,654,817	202,426	98.38

* Theoretical consumption. (Actually deliveries for consumption, and includes deliveries for U.S. military forces at home and abroad.)
** Includes Alaska, excludes Hawaii.
Source: Lamborn Sugar Market Report.

(a) During 1941, a large quantity of the deliveries went into the building up of the "invisible" supply, and was not consumed during that year. In 1942, the major portion of this invisible supply was recaptured by the OPA and reallotted for consumption during 1942.

climbed to 2.5 cents a pound during the 1930-34 period and subsequently declined to its present level of 0.625 cents beginning in 1951.

MODERN U.S. SUGAR LEGISLATION

The Depression of 1929 drove home the point that tariffs alone could not be the sole tool to regulate U.S. sugar supplies. In 1934, the Jones-Costigan Act amended the Agricultural Adjustment Act to include sugar as a basic commodity under the general farm program.

It provided for a processing tax on refined sugar, for benefit payments to sugarbeet and sugarcane growers under production adjustment contracts, and for quotas for domestic and foreign areas supplying the U.S. market. The Supreme Court in 1936 declared the benefit payments and taxes on sugar unconstitutional, but quotas were not questioned and continued in effect.

The Sugar Act of 1937, which embodied the basic principles of the Jones-Costigan Act, was signed into law September 1 of that year and continued in effect until succeeded by the current law, the Sugar Act of 1948. However, the quota system was suspended for several years during the 1940's because of World War II.

The Sugar Act of 1948 has been extended six times with various amendments. The Sixth Extension and amendment, signed by President Lyndon B. Johnson on November 8, 1965, expires December 31, 1971.

U.S. SUGAR ACT

The United States Sugar Act, generally called the Sugar Act of 1948, as amended, is a federal law designed to achieve three major goals:

1. To assure consumers of adequate supplies of sugar at reasonable prices.
2. To maintain the domestic sugar industry.
3. To promote the export trade of the United States.

It was also designed to be self-supporting.

To a remarkable degree it has achieved these goals.

During the 35 years in which the present law (or its predecessors) has been in force, abundant supplies of sugar have been available to consumers at fair and reasonable prices. A vigorous sugar industry has developed within our national borders, yet day after day our ports receive sugar cargoes from friendly nations around the world.

There have been social gains too. Notably in the improvement of wages and working conditions of farm laborers.

The program has put more than one-half billion dollars into the U.S. Treasury above its costs.

Finally, the cost of sugar has not kept pace with other food commodities. Only once in nearly four decades have sugar prices equalled the price index generally. At all other times, the price of sugar has been well below the index of all food prices.

Sugar Prices and Per Capita Disposable Income, 1910–1969

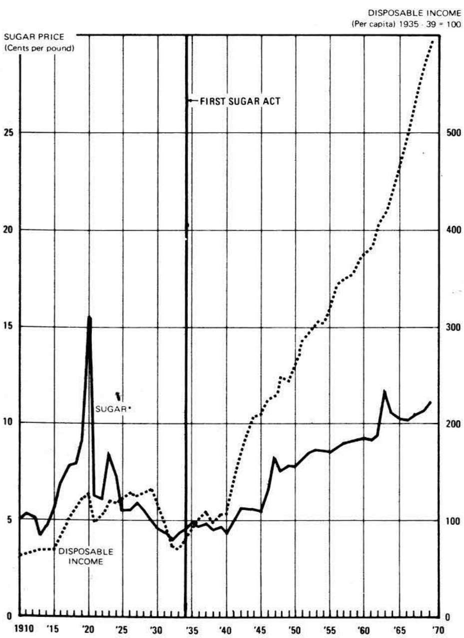


Figure 2

* REFINED SUGAR PRICES, NET CASH, WHOLESALE, NORTHEAST
SOURCE: UNITED STATES DEPARTMENT OF AGRICULTURE

HOW THE SUGAR ACT WORKS

The Act directs the Secretary of Agriculture in the fourth quarter of each year to estimate the consumption of sugar in the U.S. for the year ahead.

Once he has arrived at an estimate, the total amount of sugar it represents is allocated among domestic and foreign sources of supply by a formula set down in the Act. These allocations are quotas—the amount of sugar each area is permitted to market in the United States in the ensuing year.

Roughly 40 percent of the total is assigned to 31 foreign countries. Nineteen of them are in the Western Hemisphere.

If, as the year advances, it appears that the Secretary of Agriculture's estimate of consumption is too high or too low, he may (indeed the law requires it) revise the estimate to meet the changed conditions. In the event that any area—domestic or foreign—is unable to fill its quota, the Secretary reallocates the deficit to areas which are able to fill the void and thus maintain an even flow of sugar to consumers.

Deficits in domestic areas are reallocated to foreign countries. Deficits in foreign quotas are also assigned to other foreign countries.

FAIR PRICE INFLUENCE

In any estimate of consumption—or revision of consumption—the Secretary must judge what influence his action will exert on price, how it will affect the consumer.

Through regulation of supplies of sugar available under the quotas, the Secretary has the tools necessary to bring about a range of prices which "will not be excessive to consumers and which will fairly and equitably maintain the sugar industry." In making determinations, the Act requires that changes in population, trends of consumer purchasing power, distribution of sugar during the previous 12-month period and other factors be considered.

The Secretary of Agriculture does not "fix" prices. Although his actions may influence them, actual prices are determined in the market place through bargaining between buyer and seller, and through competition among sellers.

Congress, through the Sugar Act, sets forth for the Secretary's guidance a formula for determining a "fair and reasonable" price of sugar. Congress also says that the Secretary shall regulate the supply of sugar so that prices will "protect the welfare of consumers and of those engaged in the domestic sugar industry."

The Act also directs the Secretary to attain, over the long term, a raw sugar price that bears the same relationship to the current parity index as the average raw sugar price in 1957-59 did to the 1957-59 index.

PARITY INDEX

"Parity Index" is a term often encountered in farm legislation and is used as an indicator of trends in farm costs. It is a composite figure which takes into consideration any changes in the prices farmers must pay for items essential to farm production or family living. It includes such items as machinery and equipment, seed, livestock feed, interest, taxes, food and clothing.

Application of the parity index serves two purposes:

1. It protects the consumer against runaway prices; and,
2. It gives the farmer some assurance of the price he will receive for his crop.

Essentially, the parity index's purpose is to assure the farmer that if he had to sell 2,000 bushels of wheat to buy a pickup truck in the 1957-59 period, that is all he will have to sell to make the same purchase at the current time. The parity index system has brought about stabilization of prices to the consumer at reasonable levels. The system works.

ORDERLY MARKET

The orderly operation of a quota system implies the existence of controls to prevent any single area from usurping more than its share of the market.

Control over foreign sugar supplies is relatively simple. Customs officers can turn back "over-quota" sugar at our seaports. Customs can also prevent the entry of sugar into the United States from countries which have no quotas.

In the case of domestic production, however, controls of a different nature are required.

For example, if it appears that production of any domestic area will so far exceed its quota that disorderly marketing will result, or that all sellers will not have an equal opportunity to sell their fair share, the Secretary of Agriculture may impose marketing allotments.

These allotments divide an area's quota among the individual sugar companies in the area after consideration of individual company production records, marketing histories and so on. When it is necessary to bring production into line with quotas and inventory requirements, the Secretary also is authorized to impose acreage restrictions on the domestic production of sugarcane and sugarbeets.

An orderly market achieved through quotas and, if necessary, acreage restrictions or marketing allotments, are tools supplied by the Sugar Act to help assure an adequate supply of sugar at a reasonable price to consumers.

SELF-SUPPORTING PROGRAM

While quotas seem to receive the major attention in discussions of the U.S. sugar program, it is the unique financing program—a taxpayment arrangement—that makes the program operate.

The American farmer is still master of his acres and no Government agency can dictate

Refined Sugar Prices, and Index of All Food Prices At Wholesale, 1860—1969

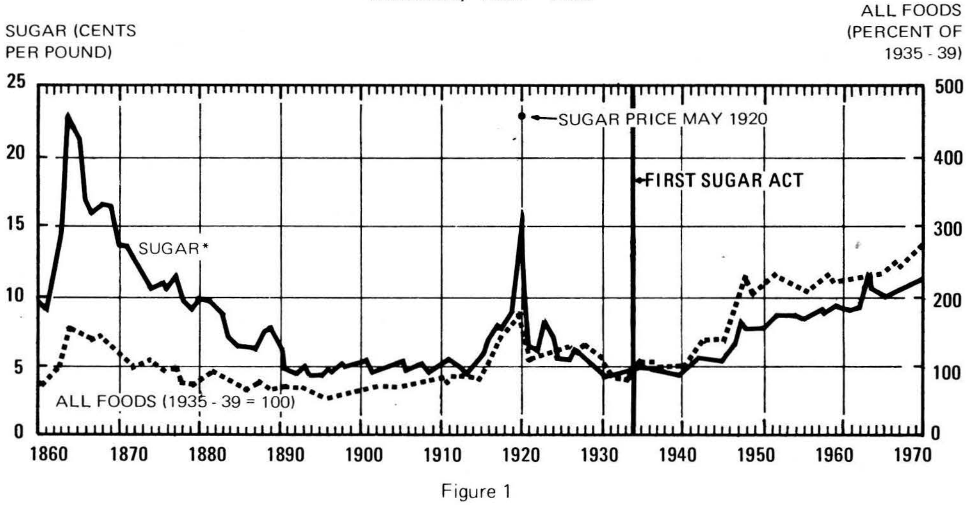


Figure 1

* REFINED SUGAR PRICES, NET CASH, NORTHEAST

the use to which his land is put in the absence of a *quid pro quo*.

In sugar, the "quid" is the so-called "conditional payment" for which a farmer qualifies only if he accepts the "quo" which is:

1. To conform to any limitation on production that may be imposed by the Secretary of Agriculture.
2. To pay wages to field workers at rates not less than those determined by the Secretary to be fair and reasonable.
3. To abide by a strict prohibition of child labor.
4. If the producer is also a processor, to pay others for their beets and cane at rates not less than those determined by the Secretary to be fair and reasonable.

The conditional payment system with its production controls makes it possible to adapt the domestic industry to the restraints implicit in a quota system.

It has also brought about a marked improvement in the wages of farm laborers, which are often higher than the minimum wages prescribed by law for industrial workers.

CONDITIONAL PAYMENT RATES

The base rate for conditional payments is 80-cents a hundred pounds ($16 a 2,000-pound ton) on the first 350 tons of sugar a farmer produces. Thereafter, the rate slides down to a minimum of 30-cents a hundred pounds ($6 a ton) on all sugar produced in excess of 30,000 tons.

CHARGES AGAINST SUGAR QUOTAS, 1950, 1955, 1960-69 (Short tons, raw value)

Area	1950	1955	1960	1961	1962	1963
Domestic beet	1,748,701	1,797,327	2,164,692	2,607,166	2,415,182	2,964,790
Mainland cane	517,985	499,623	619,047	783,611	787,354	1,072,202
Hawaii	1,144,930	1,052,004	844,788	1,044,858	1,084,179	1,032,541
Puerto Rico	1,052,706	1,079,562	895,784	980,176	904,030	875,245
Virgin Islands	10,694	9,942	6,954	16,184	10,751	15,000
Philippines Islands						
Quota Sugar	473,614	977,375	979,783	962,403	1,073,763	1,194,833
Non-Quota Sugar					182,401	
Global Quota Sugar						
Cuba	3,264,303	2,861,937	2,393,663			
Other Foreign Countries:[1]						
Quota Sugar	61,396	118,524	434,208	363,510	1,336,799	1,649,734
Non-Quota Sugar			1,187,487	2,974,275	1,404,773	
Global Quota Sugar					597,989	1,710,648
TOTAL	8,274,329	8,396,294	9,526,406	9,732,183	9,797,221	10,514,993

Area	1964	1965	1966	1967	1968	1969
Domestic beet	2,698,514	3,024,978	3,024,142	2,823,695	3,085,242	3,215,577
Mainland cane	905,511	1,099,163	1,099,929	1,169,286	1,203,921	1,169,303
Hawaii	1,110,000	1,136,753	1,200,227	1,252,543	1,191,704	1,159,820
Puerto Rico	792,788	829,570	711,325	705,113	504,081	341,231
Virgin Islands	15,856	4,282	5,405			
Philippines Islands						
Quota Sugar	1,171,090	1,178,216	1,186,123	1,122,767	1,124,002	1,124,431
Non-Quota Sugar						
Global Quota Sugar	46,269					
Cuba						
Other Foreign Countries:[1]						
Quota Sugar	1,421,462	2,647,150	3,128,093	3,310,126	3,841,660	3,724,608
Non-Quota Sugar						
Global Quota Sugar	947,717					
TOTAL	9,109,207	9,920,112	10,355,244	10,383,530	10,950,610	10,734,970

THE SUPPORTING TAX

Side by side with its provisions for conditional payments, the Internal Revenue Code imposes a tax on all sugar sold within the United States, whether domestic or foreign.

The rate of the tax is 53-cents per hundred pounds of refined sugar. This amount is less than the base rate for conditional payments to small farmers but substantially more than the rate of payment to large producers. It is equal to a tax of 50-cents per hundred pounds of raw sugar.

The tax is levied on all sugar sold in the United States—foreign or domestic—but conditional payments are made only to U.S. producers including those in Puerto Rico.

As a result, the arrangement consistently shows a net gain to the U.S. Treasury. In fact, collections by the Treasury under the Act have exceeded all expenditures, including the costs of administration and payments to producers, by more than $550 million over the past 35 years.

SEPARATE LEGISLATION

The Sugar Act is separate legislation, requiring specific Congressional action apart from the general U.S. agricultural program.

CHARGES AGAINST DIRECT-CONSUMPTION SUGAR QUOTAS

Area	1950	1955	1960	1961	1962	1963
Hawaii	29,639	29,609	5,942	78	5,695	26
Puerto Rico	125,871	125,669	154,339	148,131	149,945	154,705
Philippine Islands	6	9,600	43,342	46,808	46,757	36,735
Cuba	374,731	378,671	312,194	....	....	....
Other Foreign Countries:[2]						
Quota Sugar	....	40,558	70,630	66,107	54,656	13,970
Non-Quota Sugar	....	....	17,484	19,781	18,304	....
TOTAL	530,247	584,107	603,931	280,905	275,357	205,436

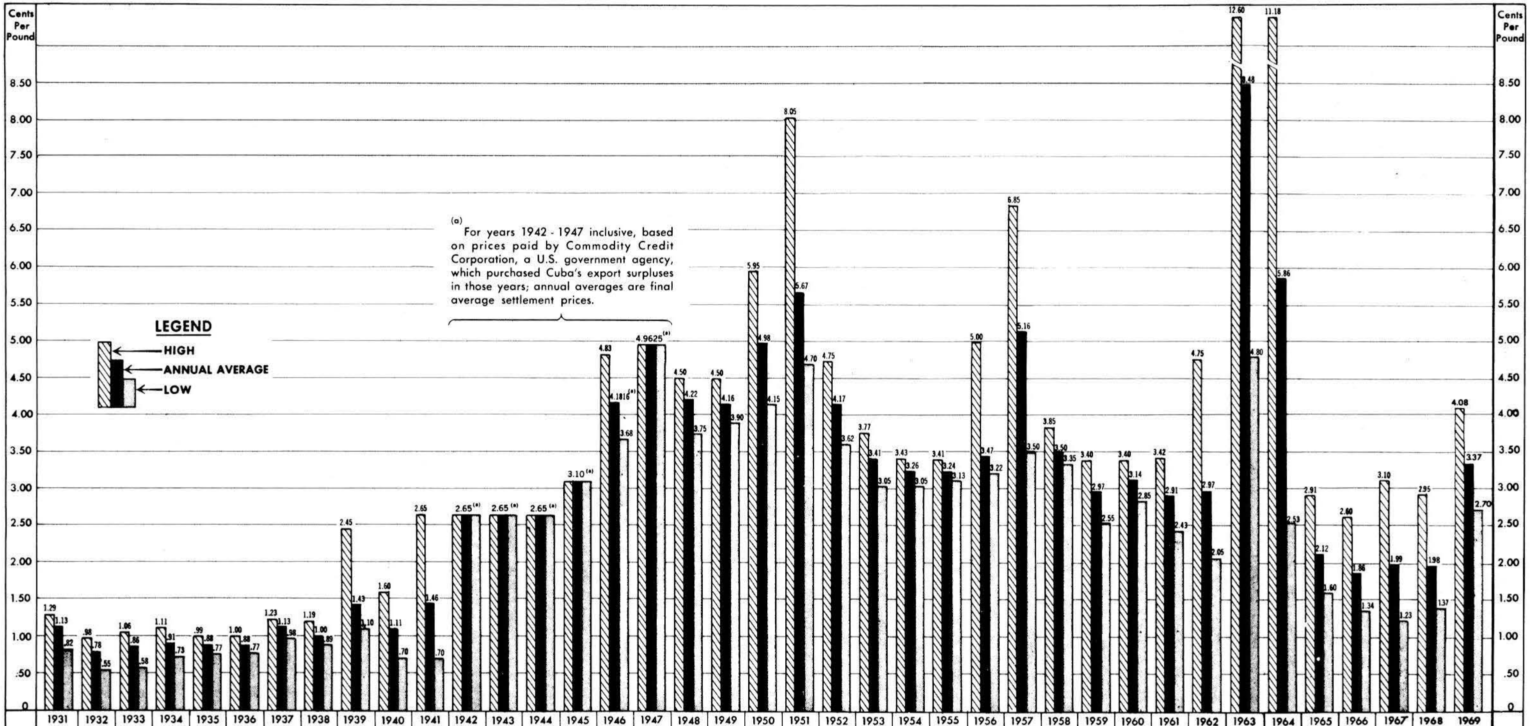
Area	1964	1965	1966	1967	1968	1969
Hawaii	1,133	3,290	293	563	4,285	4,717
Puerto Rico	146,505	144,892	155,158	160,815	164,508	129,959
Philippine Islands	56,756	34,805	14,781	20,281	20,316	5,393
Cuba	....	....	....	....	....	....
Other Foreign Countries:[2]						
Quota Sugar	3,986	6,396	7,255	9,168	9,167	8,544
Non-Quota Sugar	....	....	....	....	....	....
TOTAL	208,380	189,383	177,487	190,827	198,276	148,613

[1]Excludes first ten tons imported. [2]Prior to 1953 there was no restriction in direct-consumption imports from full-duty countries.
Source: Agricultural Stabilization Service, U.S. Department of Agriculture.

LAMBORN'S CHART OF WORLD SUGAR PRICES* — 1931 - 1969

HIGHS - ANNUAL AVERAGES - LOWS

In Cents per Pound - Raw Sugar 96°



* F.A.S. Cuba Basis for 1931 - 1960; F.O.B. Stowed Basis for 1961 — 1969

Source: Lamborn Sugar Market Report

Part IV

WORLD PRODUCTION

Sugar, a basic food, is produced by more than 110 nations throughout the world. There are two basic types—cane and beet sugar. In 1969-70, cane sugar production totaled 46.6 million tons; beet sugar totaled 32.4 million tons.

World production in 1969-70 reached record levels—79 million short tons (raw value). (In addition, another 10 million tons of noncentrifugal sugar was produced.)

WORLD PRICE

In one way or another, the people of the world dispose of about 70 million tons of sugar each year. Most of it—70 percent—is consumed in the areas where it is grown. Another 20 percent is reserved for markets where the growers have government assistance or some form of preferential treatment.

The remaining 10 percent of world production—the fraction that has no "home"—constitutes the so-called "world market" or "free market."

Prices in the world market are normally depressed, frequently below the cost of production in even the most efficient producing areas.

Critics of the sugar industry periodically contrast the distressed levels of the world market with prices in the United States and proclaim the difference to be the cost of the sugar program. This might be plausible if the world price represented an honest measure of values, but it does not.

The world price bears not the faintest relationship to costs of production, or to decent living standards. It is simply a dumping price and is so recognized universally.

It might be added that since all countries except Norway impose import levies on sugar, the world price is in truth an economic mirage.

The world market is at best a thin one, and, although it usually jogs along at fire-sale prices, any reduction in total world supplies can make it extremely volatile. In 1963, for example, when shortages in production occurred both in Continental Europe and Cuba, prices skyrocketed and a mad scramble of speculation resulted. The United States, through the operation of the quota system, was able to weather the crisis.

INTERNATIONAL SUGAR AGREEMENT

An International Sugar Agreement, negotiated during a conference held in Geneva in 1968 under the auspices of the United Nations Conference on Trade and Development (UNCTAD), entered into force on January 1, 1969.

The new Agreement replaced the 1958 International Sugar Agreement which had been concluded for a period of five years, but whose economic provisions became inoperative from the beginning of 1962 and whose administrative provisions were maintained in force, under a series of extension protocols, until December 31, 1968.

As in the previous Agreement, the major objective of the new Agreement is the stability of the "free market." (The "free market" is defined as the net imports of the world market, except those covered under special arrangements, i.e. exports to the United Kingdom under the Commonwealth Sugar Agreement, 1951; exports by Cuba and the U.S.S.R. to socialist bloc countries; exports under the African and Malagasy Sugar Agreement and exports to the United States of America. As thus defined, the "free market" represented, in 1969, a total outlet of about 8.5 million tons.) To this end, the Agreement provides for the regulation of exports by means of quotas related to the basic export tonnages

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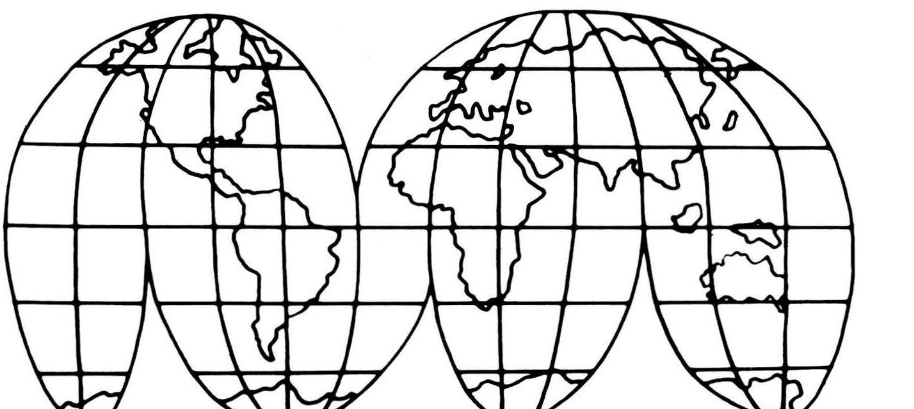

CENTRIFUGAL SUGAR: Production in Specified Countries,

(IN 000'S SHORT TONS)

Region and Country	Average 1961-65	1966	1967	1968	1969	1970[2]
NORTH AMERICA: and Central America:						
Antigua	[3]	[3]	5	1	....	11
Bahamas	....	....	....	....	15	25
Barbados	194	193	225	178	156	207
British Honduras	33	49	65	71	58	50
Canada	156	145	163	149	149	139
Costa Rica	91	139	143	140	144	150
Cuba	5,596	4,950	6,200	5,500	5,200	8,000
Dominican Republic	852	739	896	734	920	950
El Salvador	79	122	138	149	120	132
Guadeloupe	193	184	160	155	164	198
Guatemala	137	174	200	160	200	200
Haiti	70	67	60	56	60	65
Honduras	30	41	50	55	65	62
Jamaica and Dep.	524	560	502	498	432	476
Leeward-Windward Is.	75	51	....	....	....	....
Martinique	90	59	52	41	35	42
Mexico	1,899	2,320	2,679	2,520	2,220	2,300
Nicaragua	98	74	114	117	138	161
Panama	42	45	68	76	86	90
St. Kitts	[3]	[3]	44	39	39	45
Trinidad-Tobago	258	236	222	268	265	269
U.S.-Continental (beet)	2,774	2,820	2,860	2,694	3,510	3,500
U.S.-Continental (cane)	934	1,104	1,215	1,457	1,214	1,100
U.S.-Hawaii	1,142	1,234	1,191	1,232	1,180	1,235
U.S.-Puerto Rico	999	883	818	645	483	575
U.S.-Virgin Islands	13	5	....	....	....	....
TOTAL	16,279	16,194	18,070	16,935	16,853	19,982
SOUTH AMERICA:						
Argentina	949	1,422	1,001	844	1,019	1,068
Bolivia	66	100	100	120	125	125
Brazil	3,815	5,324	4,807	4,922	4,804	5,048
Chile	253	114	131	178	207	188
Colombia	421	482	635	743	784	818
Ecuador	162	210	185	205	240	300
Guyana	344	324	385	355	403	420
Paraguay	41	40	43	43	40	45
Peru	873	928	823	848	678	827
Surinam	13	20	20	20	20	20
Uruguay	54	80	69	37	71	37
Venezuela	325	397	421	390	423	518
TOTAL	7,315	9,441	8,620	8,705	8,814	9,414
WESTERN EUROPE:						
Austria	312	260	393	331	322	350
Belgium-Luxembourg	497	464	459	633	661	705
Denmark	366	265	352	363	375	335
Finland	58	43	62	70	64	46
France	2,309	2,585	1,967	1,905	2,623	2,741
Germany West	1,980	1,722	2,109	2,271	2,174	2,193
Greece	30	126	126	133	105	158
Ireland	156	130	123	166	178	168
Italy	1,082	1,356	1,513	1,804	1,422	1,498
Netherlands	620	657	633	828	792	797
Portugal	17	21	23	23	25	25
Spain	554	620	679	692	815	952
Sweden	312	222	252	283	323	252
Switzerland	44	49	65	83	73	74
UK-No. Ireland	988	1,032	1,030	1,075	1,075	1,073
TOTAL	9,325	9,552	9,786	10,660	11,027	11,367

—Average 1961-65, Annual 1966-70[1]

Region and Country	Average 1961-65	1966	1967	1968	1969	1970[2]
EASTERN EUROPE:						
Albania	13	14	18	17	17	18
Bulgaria	207	235	375	338	300	375
Czechoslovakia	1,160	963	1,021	1,000	1,005	1,100
Germany East	838	864	748	820	815	1,000
Hungary	492	495	528	495	500	600
Poland-Danzig	1,693	1,620	1,853	2,109	1,881	1,700
Romania	408	481	536	500	485	600
Yugoslavia	323	400	635	540	477	558
TOTAL	5,136	5,072	5,714	5,819	5,480	5,951
TOTAL EUROPE:	14,460	14,624	15,500	16,479	16,507	17,318
U.S.S.R.	7,623	10,700	10,304	11,503	11,651	11,000
AFRICA:						
Congo-Kinshasa	38	33	39	50	50	50
Ethiopia	67	81	82	74	73	80
Kenya	41	34	56	71	111	100
Malagasy Republic	110	126	117	118	115	120
Mauritius and Dep.	588	619	704	658	728	689
Mozambique	187	197	220	236	276	300
Rep. South Africa[4]	1,216	1,002	1,794	2,009	1,659	1,740
Reunion	246	255	240	260	295	275
Rhodesia	95	292	290	150	132	150
Swaziland	59	131	163	165	170	175
Tanzania	51	83	90	90	95	100
UAR-Egypt	413	446	385	455	425	450
Uganda	128	148	157	165	173	175
Other[5]	153	307	487	464	543	576
TOTAL	3,391	3,754	4,824	4,965	4,845	4,980
ASIA:						
Burma	67	80	86	90	90	90
China-Mainland	1,022	1,750	1,800	2,000	2,200	2,200
China, Rep. of (Taiwan)	992	1,081	884	975	834	788
India[6]	3,694	4,514	3,039	3,092	4,640	4,978
Indonesia	700	671	661	716	750	800
Iran	185	239	394	504	568	642
Japan	228	418	380	427	457	456
Nansei-Nanpo (Ryukyu)	124	161	215	243	265	275
Pakistan	229	490	510	389	451	509
Philippines	1,681	1,590	1,718	1,759	1,755	1,903
Thailand	207	315	271	264	370	492
Turkey (Europe-Asia)	621	625	773	872	778	695
Other[7]	143	120	132	119	115	128
TOTAL	9,894	12,054	10,863	11,450	13,273	13,956
OCEANIA:						
Australia	1,806	2,187	2,564	2,556	3,055	2,365
Fiji	266	339	392	441	448	347
TOTAL	2,072	2,526	2,956	2,997	3,503	2,712
TOTAL WORLD	61,035	69,293	71,137	73,034	75,446	79,362

[1]Years shown are last year of the crop-harvesting season. For chronological arrangement here, all campaigns which begin not earlier than May of one year, nor later than April of the following year, are placed in the same crop-harvesting year. The entire season's production of each country is credited to the May/April year in which harvesting and sugar production began. [2]Preliminary. [3]Prior to 1967 included in Leeward and Windward Islands. [4]Prior to 1962-63 included Swaziland. [5]Other Africa includes Algeria, Afars Issas, Somali Republic, Sudan, Angola, Congo (Brazzaville), Liberia, Tunisia, Ghana, Nigeria, Malawi, Zambia, Morocco, and Cameroon. [6]Includes khandsari. [7]Other Asia includes Afghanistan, Israel, Syria, South Vietnam, Iraq, Lebanon, Ceylon, Nepal, and South Korea.
Source: Foreign Agricultural Service. Prepared or estimated on the basis of official statistics of foreign governments, other foreign source material, reports of U.S. Agricultural Attaches and Foreign Service officers, results of office research and related information.

SUGAR SUPPLY AND DISTRIBUTION BY COUNTRIES, 1968

(METRIC TONS—RAW VALUE)

(To convert to short tons multiply by 1,1023. Footnotes — see page 39)

Countries	Production	Imports	Consumption	Exports
	SUPPLY		DISTRIBUTION	
NORTH AMERICA:	127,988	907,005	1,021,124	23,700
Canada	117,749	862,902	967,544	23,700
U.S.A.	5,689,715	4,654,537	10,217,932	1,206
U.S.A. (Mainland)	(3,988,439)	(4,654,537)	(10,067,081)	(1,206)
Hawaii	(1,115,795)	(0)	(35,732)	(0)
Puerto Rico & Virgin Isl.	(585,481)	(0)	(115,119)	(0)
TOTAL	5,817,703	5,561,542	11,239,056	24,906
EUROPE:				
Albania	17,000[1]	17,098[4]	36,000[1]	0
Austria	299,234	0	357,309	0
Bulgaria	313,044[8]	(364,359)[4]	340,000[1]	13,037[5]
Cyprus	0	13,879	13,875	4
Czechoslovakia	839,000	200,192	660,000	312,438
Denmark[7]	340,853	782	260,788	156,258
E.E.C.	7,313,386	338,888	7,210,044	977,285
Finland	48,967	222,656	204,512	56,902
French Overseas Terr.[11]	0	20,647	21,800[1]	0
Germany (East)	660,000[1,8]	(289,156)[4]	560,000[1]	118,071[5]
Gibraltar	0	1,305	1,400[1]	0
Greece	96,000	96,652	197,000	0
Hungary	421,670	14,319	386,007	18,057
Iceland	0	12,066	11,000[1]	0
Ireland	152,306	51,280	185,160	16,195
Malta	0	20,329	21,000[1]	0
Norway	0	194,806	189,131	0
Poland	1,852,000	21,109	1,347,619	702,936
Portugal: Mainland[3]	0	163,771	196,901	0
Azores & Madeira[3]	14,006	3,263	16,616	4
Roumania	417,393	54,348	400,000[1]	68,478
Spain: Penin. & Bal.	716,118	191,656	800,000[1]	0
Canary Isl.	0	39,485	37,000[1]	0
Sweden	296,200	151,664	352,203	19,354
Switzerland	67,705	282,722	319,062	9,916
Turkey	700,000	0	587,015	28,617
United Kingdom	937,000	2,134,569	2,887,000	223,822
U.S.S.R.	9,815,000	1,755,396	10,328,349[2]	1,460,623
Yugoslavia	432,609	73,913	550,000[1]	75,788[5]
TOTAL	25,749,491	6,096,795	28,476,791	4,257,785
SOUTH AMERICA:				
Argentina	932,980	0	912,755	133,092
Bolivia	115,334	0	100,766	9,660
Brazil	4,381,944	0	3,546,891	1,078,704
Chile	170,000[1]	178,047[4]	327,662	0
Colombia	663,327	0	446,772	238,311
Ecuador	200,000[1]	0	120,000[1]	79,704[5]
French Guiana	0	1,352	1,100[1]	0
Guyana	337,884	328	26,166	315,939
Paraguay	37,108	0	43,991	76
Peru	752,132	0	350,783	459,419
Surinam	17,123	58	10,920	7,523
Uruguay	70,000[1]	69,121[4]	120,000[1]	0
Venezuela	338,040	0	327,751	63,279
TOTAL	8,015,872	248,906	6,335,557	2,385,707

	SUPPLY		DISTRIBUTION	
Countries	Production	Imports	Consumption	Exports
CENTRAL AMERICA:				
Bahamas	0	4,985[4]	5,000[1]	0
Barbados	167,999	627	12,969	161,172
Bermuda	0	2,438[4]	2,300[1]	0
British Honduras	64,974	953	4,243	64,340
Costa Rica	136,000[1]	0	70,000[1]	71,889[5]
Cuba	5,315,197	0	681,613	4,612,923
Dominican Republic	665,917	0	134,852	625,023
El Salvador[10]	134,611	0	64,228	62,297
Guatemala	160,604	0	109,924	56,470
Haiti	67,000[1]	0	42,000[1]	24,828[5]
Honduras	50,000[1]	0	37,000[1]	7,568[5]
Jamaica	460,992	0	87,117	396,897
Leeward and Windward Isl.	37,944	2,162	15,530	36,256
Mexico	2,336,203	0	1,767,390	676,321
Netherlands Antilles	0	7,388	7,500[1]	0
Nicaragua	110,000[1]	0	59,000[1]	45,781[5]
Panama	73,148	0	35,000[1]	29,172
Panama Canal Zone	0	2,300[1]	2,300[1]	0
Trinidad & Tobago	248,803	52	44,733	202,995
Virgin Isl. (U.K.)	0	500[1]	550[1]	0
TOTAL	10,029,392	21,405	3,183,249	7,073,932
ASIA:				
Afghanistan[9]	19,000[1]	15,485[4]	75,000[1]	0
Brunei	0	4,512[4]	4,200[1]	0
Burma	75,471	0	55,133	0
Cambodia	0	12,187	10,843	0
Ceylon	8,542	241,938	264,400	0
China (Mainland)	2,500,000[1]	431,760[2]	2,800,000[1]	233,436[5]
China (Taiwan)	814,409	0	198,661	651,342
Hong Kong	0	153,734	83,727	58,796
India	2,375,339	0	2,399,590	104,663
Indonesia[3]	599,569	120,000[6]	740,000[1]	0
Iran	457,638	104,300	652,176	0
Iraq	4,233	268,132	304,585	0
Israel	27,563	152,869	132,744	0
Japan	626,822	1,886,122	2,408,256	30,695
Jordan	0	78,662	80,000[1]	0
Korea (North)	0	149,143[4]	120,000[1]	2,718[5]
Korea (South)	0	152,842	141,127	10,257
Kuwait	0	44,361	18,913	11,242
Laos	0	4,383	4,000[1]	0
Lebanon	9,000	25,362	55,362	5,000
Macao	0	2,315	2,762[3]	0
Malaysia:				
West Malaysia	0	312,702	280,000[1]	0
Sabah	0	17,696	17,698	0
Sarawak	0	26,314	26,293	21
Maldive Islands	0	2,746	3,300[1]	0
Mongolia	0	19,872[4]	21,000[1]	0
Nepal	10,000[1]	16,440[4]	15,000[1]	0
Pakistan	428,880	207,556	585,394[2]	0
Persian Gulf	0	18,021[4]	25,000[1]	0
Philippines	1,650,000[1]	0	645,000[1]	1,020,102[5]
Saudi Arabia	0	60,000[6]	60,000[1]	0
Singapore	0	239,636	199,305[2]	31,785
Southern Yemen, Rep. of	0	63,670	59,417	3,706
Syria	28,747	54,848	83,595	0
Thailand[10]	188,777	0	192,800	0
Timor[3]	0	774	680	0
Vietnam (North)	0	50,971[4]	50,000[1]	0
Vietnam (South)	0	103,234	120,537	0
Yemen	0	41,659[4]	50,000[1]	0
TOTAL	9,823,990	5,084,248	12,986,498	2,163,763

Cont. on Next Page

Countries	SUPPLY Production	Imports	DISTRIBUTION Consumption	Exports
AFRICA:				
Algeria	6,901	242,301	229,057	0
Angola[3]	65,213	2,308	48,091	13,742
Botswana	0	10,500[1]	10,020	0
Burundi	0	2,000[1]	2,000[1]	0
Cameroon	0	14,366	13,500[1]	0
Cape Verde Islands[3]	0	3,993	3,698	0
Central African Republic	0	4,120	4,100[1]	0
Chad	0	19,313	20,000[1]	0
Congo (Brazzaville)	92,341	0	4,500[1]	66,681
Congo (Kinshasa)	39,153	965	42,000	0
Dahomey	0	13,158[1]	10,000[1]	0
Equatorial Guinea	0	800[1]	800[1]	0
Ethiopia	70,800[3]	1,836	73,500[3]	0
Gabon	0	1,966	1,800[1]	0
Gambia	0	8,463	6,229	0
Ghana	7,000[1]	95,350	75,651	0
Guinea	0	12,089	13,000[1]	0
Ivory Coast	0	40,304	39,131	0
Kenya	88,415	58,260	143,924	0
Liberia	0	6,163	4,500[1]	0
Libya	0	33,991	54,000[1]	0
Malagasy Republic	104,555	0	44,965	60,265
Malawi	20,489	4,103	23,693	6
Mali	5,000	32,807	27,000[1]	0
Mauritania	0	28,420[4]	28,000[1]	0
Mauritius	632,223	27	31,659	612,752
Morocco	90,000[1]	277,110[4]	390,000[1]	2,000[1]
Mozambique[3]	214,452	0	72,348	134,077
Niger	0	3,695	7,000[1]	0
Nigeria	20,522	35,563	81,697[2]	4,805
Portuguese Guinea[3]	0	1,553	1,865	0
Rwanda	0	2,100[1]	2,100[1]	0
St. Helena	0	257[4]	220[1]	0
St. Thome and Principe[3]	0	939	974	0
Senegal	0	59,382	68,278	1,024
Seychelles	0	4,198	1,900[1]	0
Sierra Leone	0	26,000[6]	25,000[1]	0
Somalia	36,000[1]	0	37,000[1]	0
South Africa	1,787,867	0	812,463	926,049
Southern Rhodesia	150,000[1]	0	80,000[1]	75,000[1]
Spanish Sahara	0	250[1]	250[1]	0
Spanish Poss. in N. Africa	0	4,339	5,500[1]	0
Sudan	100,500	195,653	200,165	0
Swaziland	161,829	0	11,452	151,589
Tanzania[3]	82,429	7,077	85,341	135
Togo	0	12,216	10,000[1]	0
Tunisia	3,973	83,094	81,781	250
Uganda[3]	149,577	0	100,922	40,618
U.A.R. (Egypt)	413,577	103,494[4]	482,055	82,840
Upper Volta	0	13,082	13,082	0
Zambia	21,508	25,716[4]	40,949	0
TOTAL	4,364,324	1,493,321	3,567,160	2,171,833
OCEANIA:				
Australia	2,800,305	0	688,924	2,184,952
British Oceania	0	3,600[1]	3,600[1]	0
Fiji	381,297	180	21,905	367,207
New Zealand	0	137,656	146,270	0
U.S. Oceania	0	5,100[1]	5,100[1]	0
Western Samoa	0	3,425	3,600[1]	0
TOTAL	3,181,602	149,961	869,399	2,552,159
WORLD TOTAL	66,982,374	18,656,178	66,657,710	20,630,085

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laid down in the Agreement; for adjustments of quotas in effect at various price levels between the equivalents of 3.25 and 5.25 cents per lb. f.o.b. and stowed, Caribbean port, in bulk (on this basis of quotations for contract No. 8 in New York and of the London Sugar Market daily price) or upon re-distribution of surrendered quotas or parts of quotas; for the maintenance of minimum stocks to meet the requirements of importing Members, for limitations on maximum stocks in exporting countries; and for limitations on imports from non-participating countries. The operative provisions of the Agreement are designed to ensure that appropriate supplies are available to the free market throughout the quota year.

As an additional step towards the stabilization of the free market, the Agreement contains, in an annex, undertakings by developed importing countries in respect of access to their markets. Added protection of importing Members is also secured in the form of supply commitments by exporting Members to importing Members in respect of quantities and price in

Cont. on Page 43

NONCENTRIFUGAL SUGAR:[1] Production in Specified Countries, Average 1961-65, Annual 1966-70[2]

(000'S SHORT TONS)

Region and Country	Average 1961-65	1966	1967	1968	1969	1970[3]
NORTH AMERICA:						
Costa Rica	27	44	44	44	45	45
El Salvador	23	25	31	29	29	30
Guatemala	38	32	46	53	53	53
Mexico	136	132	130	127	127	125
Nicaragua	22	18	18	20	11	11
Panama	4	4	4	4	6	6
TOTAL	250	255	273	277	271	270
SOUTH AMERICA:						
Colombia	683	675	749	739	728	716
Ecuador	38	36	39	44	44	44
Peru	23	15	14	14	13	14
Venezuela	53	42	39	42	42	42
TOTAL	798	768	841	839	827	816
ASIA:						
Burma	163	160	160	160	160	160
China-Mainland	417	700	700	800	800	800
Taiwan	24	24	24	21	30	19
India	4,995	5,512	5,511	4,960	6,063	6,614
Indonesia	334	330	330	330	330	340
Japan	24	8	8	8	6	7
Nansei-Nanpo (Ryukyu)	8	15	15	15	15	15
Pakistan	768	616	616	765	711	672
Philippines	51	64	62	63	68	70
Thailand	148	165	182	198	215	231
Vietnam South	36	40	40	18	9	10
TOTAL	6,967	7,634	7,648	7,338	8,407	8,938
TOTAL WORLD	8,015	8,657	8,762	8,454	9,505	10,024

[1]Noncentrifugal sugar includes all types of sugar produced by other than centrifugal process which is largely for consumption in the relatively few areas where produced. The estimates include such kinds known as piloncillo, panela, papelon, chancaca, radura, jaggery, gur, muscovado, panocha, etc. [2]Years shown are last year's crop-harvesting season. For chronological arrangements here all campaigns which begin not earlier than May of one year, nor later than April of the following year, are placed in the same crop-harvesting year. The entire season's production of each country is credited to the May-April year in which harvesting and sugar production began. [3]Preliminary. *Source:* Foreign Agricultural Service. Prepared or estimated on the basis of official statistics of foreign governments, other foreign source materials, reports of U.S. Agricultural Attaches and Foreign Service Officers, results of office research and related information.

← FOOTNOTES: SUGAR SUPPLY & DISTRIBUTION BY COUNTRIES, 1969 Pages 37, 38, 39

[1]Estimated. [2]Calculated. [3]Tel Quel. [4]As reported by countries of origin. [5]As reported by countries of destination. [6]Partly estimated. [7]Includes Greenland. [8]Partly includes processed imported raws. [9]Year ending 20th March, 1969. [10]Crop year. [11]Comores. Fr. Terr. of Afars Issas, French Oceania, New Caledonia, New Hebrides and St. Pierre Miquelon.
Source: International Sugar Council.

[10]Crop year.

PRICES OF WHITE REFINED SUGAR IN SELECTED COUNTRIES
on 1st January 1967 and 1968, and Representative Prices for Year 1969.

(In U.S. Cents and U.K. Pence per Pound)**

Countries	Locality (1969 prices)	Retail Prices Jan. 1, 1967	Retail Prices Jan. 1, 1968	1969 Representative Prices Wholesale	1969 Representative Prices Retail
NORTH AMERICA					
Canada	Montreal	8.1	8.9	7.7	10.2
U.S.A.	56 cities	12.2	12.2	10.64	12.2
CENTRAL AMERICA					
British Honduras	Belize	7.0	6.0	5.2	6.0
Costa Rica	whole country	....	....	8.7	10.0
Cuba	whole country	....	....	....	6.9
Dominican Rep.	whole country	....	9.5	7.9	8.6
El Salvador	whole country	9.9	10.0	8.9	9.9
Guatemala	whole country	7.9	7.9	....	....
Honduras	....	....	....	....	9.9*
Jamaica	....	9.7	....	12.5	13.0
Mexico	Mexico City	5.6	....	....	5.6*
Nicaragua	....	....	8.6	....	....
Panama	....	....	....	10.1	11.0
Trinidad & Tobago	Port of Spain	....	7.3	7.5	7.8
West Indies:					
Bahamas	Nassau	8.4	....	7.8	9.8
Barbados	Bridgetown	11.1	11.7	7.5	9.0
Turks & Caicos	whole country	14.0	....	8.0	12.0
Bermuda	Hamilton	7.2	....	3.3	11.0
Leeward Islands:					
Antigua	whole country	8.8	7.5	....	....
Montserrat	whole country	11.7	....	10.0	11.5
St. Kitts-Nevis	Basseterre	8.8	9.0	9.0	17.0
Windward Islands:					
Dominica	Roseau	8.8	8.0	....	....
Grenada	St. George's	....	8.0	....	....
St. Lucia	Castries	10.5	....	....	....
St. Vincent	Kingstown	9.3	8.0	....	7.5*
Virgin Is. (Br.)	whole country	17.0	....	....	17.0*
SOUTH AMERICA					
Bolivia	whole country	....	....	....	7.6*
Brazil	Rio de Janeiro	6.6	6.4	....	....
Chile	Santiago	....	11.1	8.8	11.2
Colombia	....	....	6.1	....	5.4*
Guyana	Georgetown	....	....	....	3.9*
Paraguay	whole country	....	....	....	7.9*
Peru	Lima	6.1	6.7	....	6.0
Uruguay	....	....	9.8	....	....
Venezuela	whole country	10.1	10.1	8.8	10.1
EUROPE					
Austria	whole country	11.9	11.9	10.7	12.2
Belgium	whole country	16.7	15.5	....	....
Cyprus	Nicosia	7.0	6.0	....	7.0
Denmark	whole country	13.5	....	....	14.1*
Finland	average	17.0	13.1	12.6	14.3
France	whole country	13.1	....	....	....
Germany (West)	whole country	14.0	....	....	13.7*
Gibraltar	whole country	12.3	....	6.8	7.5
Greece	Athens-Piraeus	18.0	19.5	18.4	20.0
Iceland	Reykjavik	7.3	....	6.9	9.5
Ireland	average	11.4	....	....	10.5*

Cont. on Next Page

*Price on 1st January 1969.
**One U.S. cent equals one U.K. pence.

Source: International Sugar Council

PRICES OF WHITE REFINED SUGAR IN SELECTED COUNTRIES
on 1st January 1967 and 1968, and Representative Prices for Year 1969. (cont.)

Countries	Locality (1969 prices)	Retail Prices Jan. 1, 1967	Retail Prices Jan. 1, 1968	1969 Representative Prices Wholesale	1969 Representative Prices Retail
Italy	whole country	17.1	17.1	....	....
Malta	whole country	....	....	....	5.3
Netherlands	whole country	14.7	15.6	....	16.8*
Norway	Oslo	6.0	6.3	5.7	8.2
Portugal	whole country	11.3	11.4	....	11.5*
Azores	whole country	....	....	....	13.9*
Madeira	whole country	....	....	....	13.1*
Spain	whole country	....	....	....	10.0*
Sweden	average	13.6	13.0	9.5	13.5
Switzerland	whole country	8.1	9.3	7.2	9.3
Turkey	whole country	13.7	13.9	15.1	16.4
United Kingdom	whole country	9.3	8.5	8.3	9.0
Yugoslavia	whole country	9.5	....	9.0	9.7
ASIA					
Burma	Rangoon	....	....	....	12.4*
Cambodia	Phnom-Penh	27.2	....	14.7	17.2
Ceylon	Colombo	14.0	12.1	11.5	12.1
China (Taiwan)	Taipei area	13.2	11.5	11.7	13.0
Hong Kong	whole country	7.1	....	4.7	8.0
India	Kanpur	7.9	10.1	10.0	10.1
Indonesia	average	....	....	....	6.7*
Iran	whole country	14.4	13.8	13.7	14.3
Iraq	whole country	8.3	8.3	9.9	10.5
Israel	all cities	10.4	....	....	....
Japan	Tokyo	15.6	16.1	....	16.4*
Jordan	whole country	4.4	5.1	....	5.1*
Korea (South)	Seoul	16.8	17.8	15.0	15.7
Kuwait	whole country	6.4	6.4	5.1	6.4
Laos	Vientiane	....	....	....	11.2*
Lebanon	whole country	....	10.3	9.4	10.5
Macao	whole country	....	....	....	7.2*
Nepal	main centres	....	....	....	13.4*
Pakistan	West	13.9	17.9	17.6	17.9
Philippines	Manila	8.4	7.3	....	9.6*
Sabah	Kota Kinabalu	....	6.9	....	7.8
Sarawak	Kuching	....	6.1	6.6	7.2
Singapore	Singapore City	7.2	7.8	6.9	7.8
Southern Yemen Rep.	Aden	....	....	5.2	6.0
Syria	whole country	11.9	....	10.6	10.9
Thailand	Bangkok	7.7	8.2	7.7	8.5
Timor	whole country	....	....	....	12.8*
Vietnam (South)	Saigon	....	....	20.1	21.5
West Malaysia	whole country	....	....	8.5	12.0
AFRICA					
Algeria	....	....	14.7	14.5	15.2
Angola	whole country	....	....	....	7.7*
Botswana	....	....	11.2	....	....
Burundi	whole country	....	....	8.0	10.2
Cameroon	Yaounde	21.7	....	14.2	15.2
Cape Verde Islands	whole country	....	....	....	12.0*
Chad	Fort Lamy	24.8	....	18.7	20.4
Congo (Kinshasa)	whole country	....	....	9.5	12.3
Dahomey	Cotonu	....	....	8.4	9.0
Ethiopia	Addis Ababa	....	....	11.4	12.2
Gabon	Libreville	....	....	13.3	15.0

Cont. on Next Page

*Price on 1st January 1969.

PRICES OF WHITE REFINED SUGAR IN SELECTED COUNTRIES on 1st January 1967 and 1968, and Representative Prices for Year 1969. (cont.)

Countries	Locality (1969 prices)	Retail Prices Jan. 1, 1967	Retail Prices Jan. 1, 1968	1969 Representative Prices Wholesale	1969 Representative Prices Retail
Gambia	Bathurst	7.0	....	....	....
Ghana	Accra	....	9.8	....	....
Ivory Coast	Abidjan	....	12.2	7.1	7.5
Kenya	railheads	....	....	....	9.8*
Liberia	Monrovia	....	25.0	....	....
Libya	whole country	6.4	6.1	5.6	6.4
Malawi	Blantyre	....	11.0	....	11.0*
Malagasy Rep.	Tananrive	....	....	20.4	22.8
Mali	Bamako	18.4	10.8	....	27.6*
Mauritania	Nouakchott	14.5	13.8	12.6	13.7
Mauritius	Port Louis	4.4	....	3.4	3.8
Morocco	average	17.3	16.5	....	....
Mozambique	whole country	....	....	....	8.9*
Niger	Niamey	....	14.0	....	....
Nigeria	whole country	14.0	14.0	....	....
Port. Guinea	whole country	....	....	....	10.4*
Rhodesia	whole country	14.0	....	....	....
Rwanda	....	....	6.1	....	....
St. Helena	whole country	9.3	8.0	8.2	10.0
S. Thome & Principe	whole country	....	....	....	9.7*
Senegal	Dakar	....	10.2	....	....
Seychelles	Victoria	7.6	....	....	6.5*
Sierra Leone	Freetown	....	....	....	9.6*
Somalia	Mogadiscio	....	15.2	14.1	15.2
South Africa	Pretoria	8.4	....	8.7	9.8
Sudan	whole country	20.1	....	....	20.3*
Swaziland	Mbabane	9.7	4.5	....	....
Tanzania	Dar-es-Salaam	10.5	10.5	9.7	10.5
Togo	Lome	....	....	....	8.7*
Tunisia	whole country	....	....	9.3	9.6
U.A.R. (Egypt)	whole country	....	12.0	11.8	11.8
Uganda	average	....	9.1	....	....
Upper Volta	Ouagadougou	13.8	....	....	14.8*
Zambia	railheads	....	11.1	4.5	5.0
OCEANIA					
Australia	capital cities	10.0	11.7	10.1	11.7
Br. Solomon Islands	Honiara	13.3	11.2		11.2
Fiji	Suva	7.9	....	....	11.4*
Hawaii	Honolulu	....	....	....	13.5*
Gilbert & Ellice Isles	Tarawa	8.9	....	....	10.0*
New Hebrides	Vila	11.3	11.0	....	11.2*
New Zealand	4 main centres	7.5	6.3	7.2	7.9
Tonga	Nuku 'alofa	7.5	9.0	....	9.0*
Western Samoa	Apia	....	11.1	8.9	11.2

*Price on 1st January 1969.

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times of shortage or high prices.

The Agreement also contains special provisions in favor of developing countries. Thus, developing exporting Members with small basic export tonnages share each other's shortfalls, in addition to participating in such redistribution of shortfalls by other Members as may take place; a larger share is reserved for all developing exporting Members in shortfall re-distributions and, for special cases of hardship, a special hardship reserve of up to 150,000 tons a year is available to them.

For developing importing Members, provision is made whereby they may, occasionally, become net exporters up to a maximum of 10,000 tons in any year.

The Agreement also provides for measures designed to assist in securing an appropriate expansion in sugar consumption for human, industrial and other uses.

Thirty-four exporting and fourteen importing countries are parties to the Agreement; one further exporting and two further importing countries are in the process of acceding to it.

The United States, which is not a party to the new Agreement, accepted an invitation to observe at sessions of the International Sugar Council in 1969 and 1970.

(*Source:* International Sugar Organization)

NEW YORK COFFEE AND SUGAR EXCHANGE, INC.

The world's largest market for trading in raw sugar is New York. Here are located the principal buyers and sellers, or their agents, of raw sugar for the U.S. domestic market. In addition, a very large proportion of the sugars sold to world market buyers of sugar is also channeled through New York.

Of extreme importance in this market is the New York Coffee & Sugar Exchange, Inc., whereon sugars for both the U.S. and world markets are bought and sold for future delivery. The Exchange is located at 79 Pine Street, New York, N.Y. The Sugar Exchange, like all organized commodity markets, provides the opportunity for various vital economic functions to be performed.

The Exchange provides a market in which the sugar producer may hedge (sell) all or part of his anticipated production and thus guarantee his price. Amongst other advantages, this facilitates financing. Conversely, the sugar buyer can determine a price far in advance by buying on the Exchange. This enables the buyer to anticipate his requirements and establish his cost.

Each day during trading hours, there is a ready market for buying and selling. This is not the case in actuals.

The Exchange is a public market with all quotations and trades a matter of open record. This permits all who are interested in sugar to know its value from day to day and, if necessary, minute to minute. Through the Exchange function, there is recorded the meeting of minds of buyers and sellers as to values as represented by trades or bid and asked prices.

The Exchange serves as a guidepost for the future by providing a means of trading for delivery in position as much as a year and a half ahead. The quotations, representing, as they do, the thinking of the keenest students of the sugar market, foreshadow coming events.

The Exchange disseminates information pertaining to sugar received from all corners of the earth.

To the Exchange trading floor come buying and selling orders which may emanate from all parts of the sugar world—from producers, refiners, merchants, sugar consumers. The public is also represented through the speculative activity which is a necessity for the creation of a broad, stable, realistic commodity market.

In the "ring," which is the designation of the area within which trades may be made, specialists known as "floor brokers" execute the buying and selling orders of their clients. All trading is done by open outcry and there are adequate safeguards to assure equitable treatment for all traders, be they large or small.

At the conclusion of each day's trading, all purchases and sales are submitted by the broker members of the New York Coffee & Sugar Clearing Association to that Association. The Clearing Association intervenes as a principal in each transaction. It becomes the buyer on each sale made and the seller on each purchase made—thus protecting the integrity of all contracts made on the Exchange.

The brokers deposit margins with the Clearing Association as a guarantee that the contracts will be fulfilled. These margins are, moreover, maintained adequately each day as the market fluctuates.

An additional protection is afforded through the Guarantee Fund of the Clearing House which is created by a deposit made by each firm at the time it joins the Clearing Association. The Guarantee Fund is available to make good any default by a member firm.

NEW YORK SPOT SUGAR PRICES

DOMESTIC NO. 10 SPOT

This is the quotation at 2 P.M. for raw centrifugal cane sugar, reasonably due within 45 days, basis 96°, in bulk (net, without bag allowance), dutypaid or dutyfree, deliverable in customary North Hatteras refining ports.

Only sugar permitted to be processed or consumed without penalty under any quota or allotment plan decreed by the U.S. Government or its agencies qualifies for quotation making.

The Quotation Committee consists of five members of the Exchange. Two are generally selected from refiner-members of the Exchange to represent the buyers' viewpoint, and three from the importing firms and/or brokerage houses to represent the sellers' viewpoint. The Committee follows a rather definite formula, but is not bound by rigid inflexible rules in arriving at its daily quotation. It takes into consideration not only actual sales of raw sugar but also bids and offers received by or known to members of the Committee, and perhaps substantial changes in the price of the nearest active futures month on the Exchange. Sales involving the simultaneous purchase and sale of futures by the parties to the transaction (generally referred to as "AA" trades) are excluded, as well as sales of raws by one refiner to another.

WORLD NO. 8 SPOT

This quotation is intended to reflect the price at 2 P.M. daily of raw centrifugal cane sugar, basis 96 degrees polarization, f.o.b. and stowed customary delivery port in the greater Caribbean Area including Brazil, bag basis, in cents and hundredths of a cent U.S. currency per pound. Sales made between the first and last days inclusive of any given month, providing for shipment during the same and/or the following two calendar months are considered within the "Spot" range for quotation making. The Rules of the Committee provide that the spot price shall not be established below the bona-fide bid price, nor above the bona-fide offered price, provided such bids and offers, were they to result in sales, would otherwise qualify as spot sales. In the absence of clearly defined sales, bids, or offers, the Committee may take into consideration other relevant information for determining, in its best judgment, a spot price that will be fair, just and equitable to buyers and sellers or to receivers and deliverers on the Exchange. Such relevant information may include but not necessarily be restricted to: CIF and/or C & F sales to foreign markets, sales of raw sugar of origins other than those deliverable on the No. 8 Contract, the course of prices in the No. 8 Contract, transactions not falling within the clearly defined spot period, and transactions not effected on customary contract terms.

NOTE: N.Y. Coffee and Sugar Exchange suspended trading in the No. 8 Spot price as of August 24, 1970, except for 1970 deliveries and liquidation of 1971 contracts.

WORLD NO. 11 SPOT

This is a new world sugar contract approved May 1, 1970 by the membership of the New York Coffee & Sugar Exchange. Trading began May 5 for delivery in July 1970 and subsequent months.

It was adopted by the Exchange because of the dramatic increase in the movement of sugar in bulk. (The No. 8 Contract provides for trading in bagged raw sugar.)

The No. 11 Contract contains provisions which adapt it to the International Sugar Agreement of 1968.

Under the No. 11 Contract, sugar will be deliverable F.O.B. and stowed in bulk. Warehouse deliveries will not be available. Trading months will be January, March, May, July, September and October. Activity may be carried for a period of up to 18 months in the future.

The new contract services the major non-Communist sugar-producing nations. Deliverable growths under the No. 11 Contract are British Honduras, Costa Rica, Fiji Islands, Guatemala, Honduras, Nicaragua, Republic of Congo (Brazzaville), Swaziland, Thailand and Venezuela in addition to growths of countries covered by the No. 8 Contract.

Unit of trading and price fluctuation of the No. 11 Contract will be identical to the No. 8 Contract—50 long tons (112,000 pounds) and a maximum fluctuation of ½-cent per pound from the previous day's settlement price, with the exception of Barbados and St. Kitts.

N.Y. TRADING HOURS

Trading hours of the Exchange are:

World Sugar Contract No. 8 — 10:00 a.m. to 2:55 p.m.

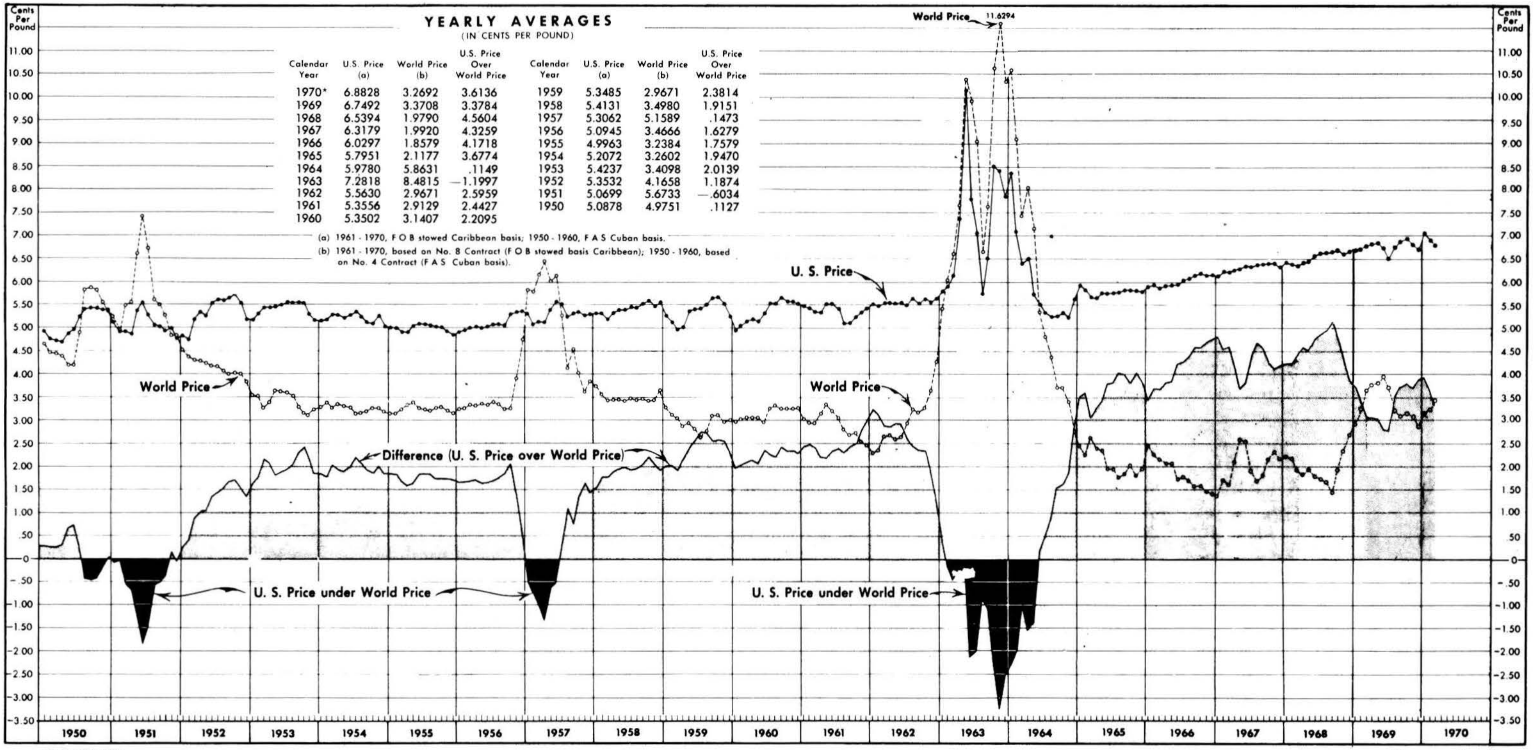
Domestic Sugar Contract No. 10 — 10:00 a.m. to 2:50 p.m.

World Sugar Contract No. 11 — 10:00 a.m. to 3:00 p.m.

LAMBORNS' SUGAR CHART SHOWING COMPARISON OF U.S. AND WORLD PRICE

RAW SUGAR - 96° — CENTS PER POUND

Monthly Averages - 1950-1970*



YEARLY AVERAGES
(IN CENTS PER POUND)

Calendar Year	U.S. Price (a)	World Price (b)	U.S. Price Over World Price	Calendar Year	U.S. Price (a)	World Price (b)	U.S. Price Over World Price
1970*	6.8828	3.2692	3.6136	1959	5.3485	2.9671	2.3814
1969	6.7492	3.3708	3.3784	1958	5.4131	3.4980	1.9151
1968	6.5394	1.9790	4.5604	1957	5.3062	5.1589	.1473
1967	6.3179	1.9920	4.3259	1956	5.0945	3.4666	1.6279
1966	6.0297	1.8579	4.1718	1955	4.9963	3.2384	1.7579
1965	5.7951	2.1177	3.6774	1954	5.2072	3.2602	1.9470
1964	5.9780	5.8631	.1149	1953	5.4237	3.4098	2.0139
1963	7.2818	8.4815	—1.1997	1952	5.3532	4.1658	1.1874
1962	5.5630	2.9671	2.5959	1951	5.0699	5.6733	—.6034
1961	5.3556	2.9129	2.4427	1950	5.0878	4.9751	.1127
1960	5.3502	3.1407	2.2095				

(a) 1961 - 1970, F O B stowed Caribbean basis; 1950 - 1960, F A S Cuban basis.
(b) 1961 - 1970, based on No. 8 Contract (F O B stowed basis Caribbean); 1950 - 1960, based on No. 4 Contract (F A S Cuban basis).

* To March 31, 1970

Source: Lamborn

Part V

MISCELLANEOUS

INDUSTRY RESEARCH & EDUCATION

All elements of the sugar industry support a broad program of research and education through three agencies—

THE SUGAR ASSOCIATION, INC.
SUGAR INFORMATION, INC.
INTERNATIONAL SUGAR RESEARCH FOUNDATION, INC.

All are non-profit membership corporations organized under the laws of the State of New York. Members include cane sugar refiners, sugar beet processors and raw sugar producers of the continental United States, Hawaii and Puerto Rico. The International Sugar Research Foundation is also supported by sugar companies and associations in Australia, Canada, Great Britain, Belgium, Ireland, Mexico, South Africa. Each of the three corporations has distinct functions to perform.

The Sugar Association, incorporated in 1949, enters into membership arrangements with the various American sugar companies; exercises control and direction in matters of general policy and allocates funds to carry on the work of Sugar Information as well as contributes on behalf of its membership to the International Sugar Research Foundation, Inc.

Sugar Information was incorporated in 1949 to serve the industry's non-research activities, such as educational work and advertising, advocating proper standards for processed foods, and affirming the rightful place of sugar in the diet and as a raw material in industry. In general, its activities are in the non-technical field. It works closely with industrial users of sugar, and with the technical sales services of cane sugar refiners and beet sugar processors. It has developed a notably successful series of publications on sugar.

International Sugar Research Foundation was incorporated in 1943, as Sugar Research Foundation, Inc., for the purposes of increasing knowledge of the rightful place of sugar in the diet, the optimum levels in food products and the potentials of sugar for use for non-food chemical and industrial purposes; all with the objective of increasing the consumption of sugar in ways consistent with the public interest.

In the past 26 years, 280 research projects have been supported by Foundation grants to educational and other non-profit research institutions and by contract with research organizations.

Food technology is of prime importance because about 98% of all the sugar which is distributed in the United States is consumed as food, and two-thirds of it is in the form of processed foods, beverages and confections. Research has demonstrated that many food processors have underestimated the sweetness level, or sugar content which consumers prefer, in for example, canned peaches, dessert cherries, ice cream, peas and whole kernel corn. Sugar has been found to have pre-eminent properties in enhancing the flavor of foods.

The Foundation is currently devoting a substantial part of its available research funds to studies of synthetic sweetening agents, which are being vigorously promoted as substitutes for sugar.

Research to develop new non-food uses for sugar in the chemical and manufacturing industries is the other major field of work. No major new non-food use has matured, but the sugar esters surfactants are in the initial stages of commercial production. Their potential usefulness in drying oils for surface coatings, as developed by Foundation-sponsored research, is being assessed.

The change to International Sugar Research Foundation took place on July 1, 1968 and although the purposes remain the same, this now autonomous organization should become truly international in character. The Sugar Association contributions to the International Sugar Research Foundation on behalf of its members are at the same rate as the international members and are based on individual production figures. The Sugar Association and its members are proportionally represented on the Board of Directors and Executive Committee.

The Sugar Association, Sugar Information and the International Sugar Research Foundation exist for the purposes of serving the industry by learning the truth about its product, by disseminating through education the truth about sugar, and through research, by seeking new uses for sugar as well as increasing sugar knowledge generally. The widespread support that the industry gives to these organizations indicates that they are serving the purposes for which they were founded.

GLOSSARY

BAGASSE: Fibrous residue remaining after sugarcane has been milled to extract the sugar-containing juices.

BLACKSTRAP MOLASSES: The final product remaining after all the commercially recoverable sucrose has been removed from the juices expressed from cane. This is a dark colored, heavy, viscous liquid.

BRIX: The measure of density of a solution, more particularly a solution containing sucrose, as determined by a hydrometer.

CALORIE: Unit expressing the energy-producing value of food. A pound of sugar contains 1,790 calories. A standard teaspoon contains 18.

CHANCACA: Raw sugar in prismatic loaves.

COSSETTES: Thin strips into which sugarbeets are sliced preparatory to the extraction of sugar.

DEXTROSE: A widely occurring crystallizable, simple sugar which contains 6 carbon atoms in contrast to 12 found in sucrose. It is obtained in commercial quantities by the action of acid on cornstarch. It is less sweet than sucrose.

FRUCTOSE: An alternate chemical name for levulose.

GLUCOSE: (1) An alternate chemical name for dextrose. (2) A name given to corn syrups which are obtained by the action of acids and/or enzymes on cornstarch. Commercial corn syrups are nearly colorless and very viscous. They consist principally of dextrose and another sugar, maltose, combined with gummy organic materials known as dextrins, in water solution.

GUR: Cane juice, concentrated nearly to dryness by boiling over an open fire, without centrifuging and with no other purification than by skimming. This ancient process is still used for producing a large share of the sugar consumed in India and some other countries. The crude product is high in glucose and correspondingly low in sucrose.

HIGH TEST MOLASSES: A concentrated, clarified cane juice which has been inverted (usually about 2/3) to prevent sucrose from crystallizing at the high concentrations normally employed.

INVERT OR INVERT SUGAR: This is the mixture of equal parts of dextrose and levulose produced by the action of acid or enzymes on solutions of sucrose.

JAGGERY: Unrefined brown sugar made especially from palm sap (as in India).

KHANDSARI: An open-pan sugar which after boiling is transferred to a clay pitcher and allowed to remain in it until complete crystallization takes place.

LEVULOSE: A highly soluble, simple sugar, also containing 6 carbon atoms. It crystallizes with great difficulty. It is not produced in commercial quantities as such but used in considerable quantities in combination with dextrose and sucrose in invert sugars. It is generally considered sweeter than sucrose.

LIQUID SUGAR: A concentrated solution of refined sucrose or of a mixture of sucrose and invert sugar.

MUSCOVADO: Unrefined or raw sugar obtained from the juice of the sugarcane by evaporation and draining off the molasses.

PANELA: Low-grade brown sugar; generally comes in round chunks that resemble loaves of bread.

PANOCHA: Mexican raw sugar.

PAPELON: Crude brown sugar produced especially in Cuba and Northern South America.

PILONCILLO: An unrefined sugar, especially when molded into cones or sticks.

POLARIZATION: Designated as "pol" and is the value determined by direct or single polarization of the normal weight solution (of sucrose) in a saccharimeter or polariscope. (Based on Spencer and Meade.)

RAPADURA: Raw sugar in Brazil.

RATOON: Second and subsequent crops grown from the root systems of previous plantings of sugarcane. Usually one or more ratoon crops are harvested before the fields are plowed and replanted.

SOFT SUGARS: These are highly refined, dark colored, molasses-flavored sugars which are frequently called brown sugars. They have a relatively high content of mineral and other non-sucrose materials.

SUCROSE: A sweet crystallizable, colorless sugar which constitutes the principal sugar of commerce. Refined cane and beet sugars are essentially 100% sucrose. Under certain conditions sucrose breaks down to dextrose and levulose (see below).

TEL QUEL: Literally, such as (it is). When used describing sugar it means "as made," hence of a polarization usually varying among mills and producing areas.

TURBINADO: Direct consumption raw sugar of high polarization which must be dried in a granulator to a very low moisture content.